



Education for rural development: towards new policy responses

*A joint study conducted
by FAO and UNESCO*

Co-ordinated and edited by

David Atchoarena,

UNESCO/International Institute for Educational Planning

Lavinia Gasperini,

FAO (Sustainable Development Department)



Food and Agriculture
Organization of the
United Nations



UNESCO Publishing
International Institute
for Educational Planning

Education for rural development: towards new policy responses

The views and opinions expressed in this booklet are those of the authors and do not necessarily represent the views of FAO, UNESCO or of the IIEP. The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of FAO, UNESCO or IIEP concerning the legal status of any country, territory, city or area or its authorities, or concerning its frontiers or boundaries.

The designations 'developed' and 'developing' economies are intended for statistical convenience and do not necessarily express a judgement about the stage reached by a particular country, territory or area in the development process.

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction of material in this information product for resale or other commercial purposes is prohibited without written permission of the copyright holders.

Applications for such permission should be addressed to the Chief, Publishing and Multimedia Service, Information Division, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy or by e-mail to copyright@fao.org and to the Chief, Communication and Publications Unit, IIEP, 7-9 rue Eugène Delacroix, 75116 Paris, France or by e-mail to copyright@iiep.unesco.org.

Published by:

Food and Agriculture Organization of the United Nations

Viale delle Terme di Caracalla

00100 Rome, Italy

e-mail: sdre@fao.org

FAO web site: <http://www.fao.org>

and

United Nations Educational, Scientific and Cultural Organization

7 place de Fontenoy, F 75352 Paris 07 SP, France

International Institute for Educational Planning

7-9 rue Eugène Delacroix, 75116 Paris

e-mail: information@iiep.unesco.org

IIEP web site: www.unesco.org/iiep

Cover design: Nathalie Pruneau

Cover photos: Lavinia Gasperini

Composition: Linéale Production

FAO ISBN: 95-5-104983-1

UNESCO ISBN: 92-803-1220-0

© FAO and UNESCO-IIEP 2003

Contents

List of abbreviations	9
List of tables	12
List of figures	14
List of boxes	15
Definitions	19
Foreword	23
Acknowledgements	26
General introduction – Rationale for the book	27
<i>David Atchoarena and Lavinia Gasperini</i>	
Chapter I Education and rural development: setting the framework	35
<i>David Atchoarena and Charlotte Sedel</i>	
Introduction	35
1. The transformation of the rural context and the new development agenda on rural poverty	36
1.1 Defining rural areas	36
1.2 Rural trends and implications for poverty reduction efforts	39
1.3 Rural areas, poor areas	41
1.4 Poverty, food security and globalization	46
1.5 New thinking on rural development	51
2. The contribution of education to rural development: theoretical expectations, empirical evidence and past strategies	55
2.1 The gradual recognition of the complex and global impact of education	55
2.2 Education in rural areas: learning from past experiences	59
References	69
Chapter II Basic education in rural areas: status, issues and prospects	77
<i>Michael Lakin with Lavinia Gasperini</i>	
Introduction	77
1. Basic education in rural areas today	80
1.1 Primary schooling	81
1.2 Other modes of basic education in rural areas	93
1.3 Learning achievement and outcomes	101
1.4 Basic education inside the poverty cycle	104
1.5 Why has basic education in rural areas been neglected?	105

2.	Improving the provision of basic education in rural areas	107
2.1	Expanding the provision of basic education with greater equity	107
2.2	Improving the quality and outcomes of basic education	142
3.	Planning and managing improvements to basic education in rural areas	153
3.1	Planning basic education for rural development	153
3.2	Co-operation and partnerships at the national and international levels	159
4.	Concluding remarks	167
	References	169

Chapter III	Making learning relevant: principles and evidence from recent experiences	175
	<i>Peter Taylor (Part 1)</i>	
	<i>Daniel Desmond, James Grieshop and Aarti Subramaniam (Part 2)</i>	

	Introduction	175
1.	Using students' environment to enhance learning: experiences and findings	176
1.1	Introduction	176
1.2	Experiences of contextualization	178
1.3	The role of agriculture in contextualizing teaching and learning in schools in rural areas	186
1.4	Beyond agriculture: contextualizing learning in HIV/AIDS and environmental education	193
1.5	Lessons learned	195
2.	Revisiting garden-based learning in schools	208
2.1	Definitions	208
2.2	Roots and history	213
2.3	Contemporary movement: overview and future directions	218
2.4	Further considerations	226
	References	231

Chapter IV	Strategies and institutions for promoting skills for rural development	239
	<i>David Atchoarena (Parts 1 and 3)</i>	
	<i>Ian Wallace and Kate Green (Part 2)</i>	
	<i>Candido Alberto Gomes (Part 4)</i>	

Introduction	239
1. Rural labour market challenges and training policy responses	240
1.1 The transformation of rural labour markets: the rise of non-farm employment	240
1.2 The provision of technical and vocational education and training in rural areas: issues and trends	248
2. Skills for agriculture and food security in sub-Saharan Africa	258
2.1 The context	258
2.2 An historical perspective	260
2.3 Emerging needs in sub-Saharan Africa: changing demands for skills and competencies in the rural sector	264
2.4 Steps towards a consistent response to training needs	269
2.5 Directions for reform	273
3. Skills development in rural Asia: trends and experiences in selected countries	276
3.1 The transformation of rural labour markets: challenges in China	278
3.2 Delivery patterns	282
4. Towards demand driven responses to training needs in rural areas: the Brazilian experience	289
4.1 The Brazilian context	289
4.2 Establishing a specific training agency for rural development	291
4.3 Main features of SENAR training provision	293
4.4 Financing and responsiveness	297
4.5 Efficiency	299
4.6 Main lessons	301
References	303
Chapter V Higher education and rural development: a new perspective	311
<i>Charles Maguire and David Atchoarena (Ed.)</i>	
Introduction	311
1. Higher education for rural development: challenges and opportunities for higher agricultural education	314
1.1 Higher agricultural education (HAE) in perspective	314
1.2 Signs of change	319
1.3 Providing support to rural development: implications for HAE	321
1.4 What is required to bring about change in HAE?	324
1.5 Desirable features of higher education	327
1.6 Policy directions and issues	330

2.	Higher agricultural education institutions: lessons from five case studies	334
2.1	The scope and issues	334
2.2	The transformation and diversification of HAE institutions' activities	338
2.3	Conducting the reform: planning, governance, staff and financing issues	359
2.4	Staff issues	368
2.5	Resistance and change	375
	References	380
Chapter VI	Main findings and implications for policy and donor support	385
	<i>David Atchoarena with Lavinia Gasperini, Michael Lakin and Charles Maguire</i>	
1.	Return to contextual issues: the decline in rural support	385
2.	Main findings	389
2.1	New opportunities for rural development	389
2.2	Basic education	390
2.3	Skill development and rural labour markets	391
2.4	Higher agricultural education	392
2.5	Donor support	393
3.	Policy implications	394
3.1	Policy focus	394
3.2	Basic education in rural areas for targeted and integrated policies	395
3.3	Skill development strategies	397
3.4	Emerging responses in the higher education sub-sector, including HAE institutions	399
3.5	Improving donor support	400
	References	406

List of abbreviations

ABE	Adult basic education
ABET	Adult basic education and training
AECOFABA	<i>Associações Escola Família Bahia</i> (Brazil)
AEP	Agricultural engineering in production
AET	Agricultural education and training
AICTE	All India Council of Technical Education
APPEAL	Asia-Pacific Programme of Education for All (Bangkok)
ARDC	Agricultural Research and Development Centre
AUH	Agricultural University of Hebei (China)
BEIRD	Basic Education Integrated into Rural Development (Namutamba, Uganda)
BRAC	Bangladesh Rural Advancement Committee
CAEC	Continuing Agricultural Education Centre
CAU	China Agricultural University
CBR	Community-based rehabilitation
CDD	Community driven development
CEPT	<i>Centro Educativo para la Producción Total</i> (Argentina)
CICE	Centre for In-service and Continuing Education
CIH	<i>Centre d'initiation horticole</i>
CLC	Community Learning Centre
COSDEC	Community Skills Development Foundation
CP	Community Polytechnics
CPAR	<i>Centre de perfectionnement des artisans ruraux</i>
DFA	Dakar Framework for Action
DOA	Department of Agriculture
DTE	Down-To-Earth Program (North Carolina, USA)
EAT	<i>Ecole d'agents techniques</i>
ECD	Early childhood development
EFA	Education for All
EMEFR	<i>Ecole nationale des monitrices d'économie familiale rurale</i>
ENCR	<i>Ecole nationale des cadres ruraux</i>
ENEA	<i>Ecole nationale d'économie appliquée</i>
ERD	Education for Rural Development

ETE	Emerging and transition economies
FAO	Food and Agriculture Organization of the United Nations
FFA	Future Farmers of America
FFS	Farmer Field School
FMDA	Farm Machinery Dealers Association
GBL	Garden-based learning
GCHERA	Global Consortium of Higher Education and Research for Agriculture
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GNI	Gross National Income
HAE	Higher agricultural education
HIPC	Highly Indebted Poor Country
ICRAF	International Centre for Research in Agroforestry
ICTs	Information and communication technologies
IDPs	Internally displaced persons
IIEP	International Institute for Educational Planning
IFAD	International Fund for Agricultural Development
IPM	Integrated Pest Management
IPPM	Integrated Production and Pest Management
ILO	International Labour Organization
ITESM	<i>Instituto Tecnológico y de Estudios Superiores de Monterrey</i> (Spain)
JIP	Joint Innovative Project (China)
LDCs	Least developed countries
MFR	<i>Maisons familiales et rurales</i>
MLA	Monitoring Learning Achievement
MOA	Ministry of Agriculture
MOE	Ministry of Education
NAFTA	North American Free Trade Area
NARO	National Agricultural Research Organisation
NAUU	National Agricultural University of Ukraine
NCC	Namibia Chamber of Craft
NEPAD	New Partnership for Economic Development
NET	Nutrition Education and Training (California)
NFPE	Non-formal primary education
NGO	Non-governmental organization
NORAD	Norwegian Development Co-operation Agency

NRM	Natural resources management
OECD	Organisation for Economic Co-operation and Development
OPAM	<i>Opera di Promozione dell'Alfabetizzazione nel Mondo</i> (Italy)
PAPF	<i>Programme alphabétisation priorité femmes</i> (Senegal)
PBL	Project-based learning
POCET	<i>Projecto en Comayagua de Educación para el Trabajo</i> (Education for Work Project in Comayagua)
PRA	Participatory Rural Appraisal (Ghana)
PRSPs	Poverty Reduction Strategy Papers
REFLECT	Regenerated Freirean Literacy through Empowering Community Techniques
RNR	Renewable natural resources
SACMEQ	Southern Africa Consortium for Monitoring Educational Quality
SAP	Structural Adjustment Programme
SFEP	Social Forestry, Education and Participation Pilot Project (Thailand)
SIMCE	<i>Sistema de Medición de la Calidad de la Educación</i> (Chile)
SNED	<i>Sistema Nacional de Evaluación del Desempeño de los Establecimientos Educativos Subvencionados</i> (Chile)
SSA	Sub-Saharan Africa
SWAPs	Sector-Wide Approaches
TLC	Total Literacy Campaign
Triple A Approach	Assessment, Analysis and Action
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPE	Universal primary education
WA	Western Australia

List of tables

Chapter I Education, rural development: setting the framework

1. Rural population trends by region and development group – 1950-2030
2. Who are the poor?
3. Prevalence of undernourishment, developing countries, 1969-2030

Chapter II Basic education in rural areas: status, issues and prospects

1. Literacy and primary school enrolment rates for selected countries distributed by urban and rural areas and by gender
2. Indicators of efficiency in primary schooling – selected countries reporting 1998 data
3. School facilities in selected African countries
4. Percentage of children receiving assistance with homework, by source and by urban or rural area
5. Percentage of new entrants to grade 1 who attended some form of early childhood development programme
6. Adult illiteracy and unenrolled primary school-age children in the less developed regions
7. Urban and rural adult illiteracy in selected developing countries
8. Urban/rural disparities in learning achievement
9. Percentages of pupils reaching desirable and minimum mastery levels in three domains of reading literacy – minimum levels distributed by location of schools

Chapter III Making learning relevant: principles and evidence from recent experiences

1. Experiences of contextualization

Chapter IV Strategies and institutions for promoting skills for rural development

1. Agriculture employment as a percentage of total civilian employment in selected OECD countries
2. Agricultural and non-agricultural distribution of employed population by area of residence in Bangladesh, 1981-1991
3. Potential key impacts of tourism on livelihoods in Namibia

4. Household income and productivity by level of education
5. Components of economic structure in families with different education backgrounds
6. Comparison of a trained and an untrained farmer's family income
7. Comparison of vocational students in every 10 thousand population – 1996
8. Comparative features of training agencies in Brazil
9. SENAR occupational training by field of action 1997-2000
10. SENAR occupational training enrolment and social promotion participants by geographical region, 2000 (%)

Chapter V Higher education and rural development: a new perspective

1. Factors impacting on HAE quality and relevance
2. HAE and education for rural development
3. Comparative background indicators
4. Profile of studied institutions
5. Stakeholders in the reform of HAE institutions (China)

List of figures

Chapter I Education, rural development: setting the framework

1. People living on less than \$1 a day (%)
2. Poverty map
3. Percentage of population undernourished, by sub-region, 1996-1998
4. Dominant and sequential themes in rural development

Chapter II Basic education in rural areas: status, issues and prospects

1. Sources of competencies in rural communities

Chapter III Making learning relevant: principles and evidence from recent experiences

1. Linkages between school, home and community environments
2. Garden-based learning – global distribution – survey and study sites

Chapter V Higher education and rural development: a new perspective

1. Student enrolment evolution at the School of Agriculture (ITESM) by degree Programme (1980-1990)
2. Number of specialities and of government-sponsored students at the National Agricultural University of the Ukraine (NAUU)
3. Fund sources of China Agricultural University (CAU) in 2001
4. Structure of self-generated income at NAUU

Chapter VI Main findings and implications for policy and donor support

1. Gross national income per capita (in US\$) according to percentage of rural populations – 1999
2. Government expenditure on agriculture as a share of total expenditure
3. ODA commitments to agriculture from 1988 to 1999

List of boxes

Chapter I Education and rural development: setting the framework

1. Definition of rurality: issues, implications, prospects
2. The international development agenda: the millennium development goals

Chapter II Basic education in rural areas: status, issues and prospects

1. Reasons given for not attending school – rural children, 6-17 years – India (1998-1999)
2. Factors determining the under-education of girls
3. Bangladesh Rural Advancement Committee (BRAC) – Non-Formal Primary Education (NFPE) schools – Bangladesh
4. Take-home food rations get more girls in school – Niger
5. Take-home rations for girls' education: lessons learned
6. Childcare practices – Malawi
7. ECD in a village – Sri Lanka
8. Second chance schools – Morocco
9. Outcomes of Tamil Nadu's Total Literacy Campaign – India
10. The REFLECT approach to literacy teaching
11. Lessons from a functional literacy programme – Philippines
12. Outsourcing literacy to NGOs – Senegal
13. World Bank recommendations for Adult Basic Education (ABE)
14. Reaching out to rural children – Cuba
15. Multi-channel learning for remote areas – Laos
16. Mobile schools – Kenya
17. Educating women in the Gobi desert – Mongolia
18. Educational actions for refugees and internally displaced persons
19. The Teacher Emergency Package (TEP) – Somalia
20. Early detection of learning disabilities – Jordan
21. Attributes of a good school
22. The anonymous and real magician
23. Learning in the rice fields
24. Providing affordable agricultural education – Brazil
25. Escuela Nueva (New Schools) – Colombia
26. The child-friendly school

27. A push for education quality: measuring outcomes and providing incentives – Chile
28. Community Learning Centres in Asia and Pacific
29. A university working with farmers – China

Chapter III Making learning relevant: principles and evidence from recent experiences

1. Contextualization of science teaching – Swaziland
2. The Social Forestry, Education and Participation (SFEP) pilot project – Thailand (1993-1996)
3. Community kitchen gardening – Bhutan
4. School-based nutrition project – Kenya
5. Improvement of school and family nutrition through integrated agroforestry systems – Panama
6. Environmental and life skills education for children from rural communities through Integrated Pest Management (IPM), student field schools – Thailand, Philippines, Cambodia, Bangladesh
7. Landcare in schools – Philippines
8. Nutrition-oriented learning materials – Tonga
9. ‘Farmers of the Future’ – a new initiative
10. ‘Green certificates’ from primary schools in Chongqing – China
11. Childscope – Ghana
12. Theories behind garden-based learning
13. School garden programmes – strategies, evaluations and impacts

Chapter IV Strategies and institutions for promoting skills for rural development

1. The impact of globalization on agriculture in emerging and transition economies (ETEs)
2. Rural employment and skills in sub-Saharan Africa
3. Old job, new skills: the ‘new’ technical foresters
4. Education centres for total production – Argentina
5. Education for work in poor rural areas – Honduras
6. Building school/enterprise partnership: Narrogin Agricultural College – Australia
7. Sustainable funding for farmer field schools
8. Social capital: an asset to cope with change in rural areas – Australia
9. The productivity challenges

10. Milestones in the development of agricultural education – Senegal
11. Training needs assessment for community forestry – South Africa
12. Diversification of training provision for the rural economy – Senegal
13. The Botswana Brigades: an update – Botswana
14. Community skills development centres – Namibia
15. Farmer schools – Philippines
16. From the field to the classroom: the side impact of IPM on school education – Thailand

**Chapter V Higher education and rural development:
a new perspective**

1. Higher education: the current situation
2. An unfinished agenda for agricultural research

**Chapter VI Main findings and implications for policy
and donor support**

1. Rural Education Project – Colombia
2. New flagship on education for rural people

Definitions

Adult education (or continuing or recurrent education): The entire body of organized educational processes, whatever the content, level and method, whether formal or otherwise, whether they prolong or replace initial education (in schools, colleges and universities as well as in apprenticeship), whereby persons regarded as adults by the society to which they belong, improve their technical or professional qualifications, further develop their abilities, and/or enrich their knowledge with the purpose:

- of completing a level of formal education;
- of acquiring knowledge and skills in a new field; and/or
- of refreshing or updating their knowledge in a particular field.

Agriculture: a broad class of resource uses which includes all forms of land use for the production of biotic crops - whether animal or plant. The term 'agriculture' is to be understood in a broad sense, to include fisheries, marine products, forestry and primary forest products.

Basic education: the whole range of educational activities that take place in different settings and that aim to meet basic learning needs as defined in the World Declaration on Education for All (Jomtien, Thailand, 1990). It thus comprises both formal schooling (primary and sometimes lower secondary) as well as a wide variety of non-formal and informal public and private educational activities offered to meet the defined basic learning needs of groups of people of all ages.

Early childhood development (ECD) programmes: programmes which offer a structured and purposeful set of learning activities either in a formal institution (pre-primary or International Standard Classification of Education 0) or as part of a non-formal child development programme. Early childhood development programmes are normally designed for children aged 3 years or above and include organized learning activities that constitute on average the equivalent of at least 2 hours per day and 100 days per year.

Education for All (EFA): in April 2000, more than 1,100 delegates from 164 countries reaffirmed their commitment to EFA at the World

Education Forum in Dakar, Senegal. They adopted the Dakar Framework for Action – a bold, practical document laying out goals and strategies for achieving Education for All.

Education for rural people: FAO and UNESCO launched in 2002 a new flagship within the Education for All (EFA) initiative with a focus on Education for rural people. The flagship is a call for collaborative action to increase the co-ordination of efforts targeting the educational needs of rural people. The partnership is open to members committed to working separately and together to promote and facilitate quality basic *education for rural people*.

Flagship programme: a series of inter-agency flagship programmes were launched or consolidated following the World Education Forum. These programmes focus on the major thrusts of the Dakar Forum, for which special co-operative efforts are needed. Each one is supported by a number of education-for-all partners. Some are led by UNESCO, while others by various United Nations agencies. FAO and UNESCO are joining efforts in the establishment of a new flagship within the Education for All (EFA) initiative with a focus on education for rural people.

Food security: a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Formal education: education provided in the system of schools, colleges, universities and other formal educational institutions that normally constitutes a continuous ‘ladder’ of full-time education, generally beginning at age five to seven and continuing up to 20 or 25 years old. In some countries, the upper parts of this ‘ladder’ are constituted by organized programmes of joint part-time employment and part-time participation in the regular school and university system: such programmes have come to be known as the ‘dual system’ or equivalent terms.

Functional literacy: a person is functionally literate who can engage in all those activities in which literacy is required for effective function of his or her group and community and also for enabling him or her to continue to use reading, writing and calculation for his or her own and the community’s development.

Informal learning: a form of learning not structured or organized by any institution; it occurs through everyday interactions with the environment that offer new information and insights, e.g. through conversation, reading, radio and television broadcasts.

Literacy: a person is literate who can both read and write, with understanding, a short simple statement on his or her everyday life.

Non-formal education: any organized and sustained educational activities that do not correspond exactly to the above definition of formal education. Non-formal education may therefore take place both within and outside educational institutions, and cater to persons of all ages. Depending on country contexts, it may cover educational programmes to impart adult literacy, basic education for out-of-school children, life skills, work skills, and general culture. Non-formal education programmes do not necessarily follow the 'ladder' system, and may be of differing duration.

Rural areas:

- a space where human settlement and infrastructure occupy only a small share of the landscape;
- natural environment dominated by pastures, forests, mountains and deserts;
- settlements of low density (about 5-10,000 persons);
- places where most people work on farms;
- the availability of land at a relatively low cost;
- a place where activities are affected by a high transaction cost, associated with long distance from cities and poor infrastructures.

Rural development: encompasses *agriculture, education, infrastructure, health, capacity-building for other than on-farm employment, rural institutions and the needs of vulnerable groups*. Rural development aims at improving rural people's livelihoods in an equitable and sustainable manner, both socially and environmentally, through better access to assets (natural, physical, human, technological, and social capital), and services, and control over productive capital (in its financial or economic and political forms), that enable them to improve their livelihoods on a sustainable and equitable basis.

The six Dakar goals (see also EFA):

1. Expand early childhood care and education.
2. Free and compulsory education of good quality by 2015.
3. Promote the acquisition of life skills by adolescents and youth.
4. Expand adult literacy by 50 per cent by 2015.
5. Eliminate gender disparities by 2005 and achieve gender equality in education by 2015.
6. Enhance educational quality.

Universal primary education (UPE): full enrolment of all children in the primary school age group, i.e. 100 per cent net enrolment ratio.

Sources: FAO and UNESCO.

Foreword

Despite unprecedented growth in world incomes and unparalleled improvements in global standards of living over the past few years, mankind has failed to rid the world of abject poverty and hunger. The numbers speak for themselves:

- 840 million undernourished people;
- 1.5 billion people who live without access to safe drinking water;
- 2 billion people who live without electricity;
- 860 million illiterate adults, more than half of whom are women;
- 130 million children out of school;
- 14 million children who have lost their mothers or both parents to AIDS.

Within each of these groups – and many of them overlap – the majority live in rural areas. Indeed more than 70 per cent of the world's poor are rural poor.

In this new millennium, in which our daily news is often dominated by terrorism, we know that inequalities feed delinquency and crime, which in turn frequently constitute a sign of the poor's exasperation with world inequalities. One of the major inequalities affecting the rural poor is their unequal access to quality education, which is so important for social and economic development.

The reduction of poverty, as well as food security and basic education form the core of the new discourse of development aid. However, the rural nature of these challenges is often overlooked. Poverty and illiteracy remain overwhelmingly rural phenomena. Poverty in rural areas is closely linked to illiteracy as well as to other forms of deprivation such as malnutrition, infant mortality, and poor access to water.

Urbanization will not solve the problem and, in fact, it is anticipated that over 60 per cent of the poor will continue to live in rural areas of developing countries in 2025. Rural poverty and illiteracy are not just transition problems or a crisis of adjustment in a process of modernization: they are structural development challenges.

The vast majority of the rural poor depend on agriculture for their livelihoods. Therefore rural development faces a key challenge to achieve both poverty reduction and Education for All. Accumulated evidence, as well as development theories, teach us that education is a powerful instrument of economic, social and cultural change.

In order to achieve the Millennium Development Goals, specifically the first two goals, which focus on reducing hunger and poverty by half and ensuring universal primary education by 2015, we need to change the traditional working modalities of international aid agencies and address the needs of the world's biggest neglected majority – rural people. This can be achieved through new multisectoral and interdisciplinary alliances and partnerships among aid specialists working in education and those working in agriculture and rural development. By taking the initiative of launching the research leading to this publication, FAO and the International Institute for Educational Planning of UNESCO have tried to take a step in that direction.

While reaching the rural poor might appear to be more costly and time-consuming than reaching the urban or peri-urban poor, we believe that this is a task that can no longer be neglected or postponed. If we want to contribute to building a world where peace prevails over war and terrorism, and prosperity over poverty, the cost-effectiveness of international aid for education for rural people needs to be analyzed in the long term and as part of a holistic approach.

A key message of this publication is that 'business as usual' and 'more of the same' will not solve the education problem in rural areas. The challenge is to find specific modalities to address the demand and supply issues that education faces in these areas. The challenge is also to link education interventions with broader poverty reduction and rural development efforts. Education for All will never be achieved in areas affected by poverty, high mortality, gender and other forms of discrimination.

But as we talk of reform and development, let us not forget the particular qualities of education for rural people that could be exported to schools in urban areas and make the latter richer – pedagogically, intellectually and academically – precisely by being more practical in

orientation. Rural life has fertilized education in many ways and this rich heritage should not be ignored and lost, but nurtured and enriched.

In industrialized countries, the social environment of children is increasingly devoid of adults – the adults they interact with are parents and teachers and a few others. There no longer exists the gradual and growing participation in the adult world and the world of work, where the grown-ups impose discipline and set the tone and the tasks at hand that need to be done. Bringing the life outside of school back to school is hence a great pedagogical challenge, and especially in modern and urban schools.

Education in rural areas takes place at many different levels, from multigrade primary schools to agricultural universities. In many countries social change and economic development have been organized by providing not only basic education (which is acknowledged as a priority), but also specific training to improve techniques employed in the rural economy. Furthermore, recent work on social capital shows that knowledge constitutes a key element for strengthening rural communities and facilitating their adaptation to change.

But, education cannot solve all problems. In a world where rich countries pay US\$1 billion a day in subsidies to their farmers – six times the amount allocated to aid – raising the educational level of the rural poor in developing countries will not, in itself, do the job. Promoting human development through domestic policies that recognize rural issues, including education policies, is highly necessary, as documented by this publication. However, such commitment and policy efforts will not produce their full impact unless the international community clearly recognizes that the present inequalities of globalization fuel mass poverty. Even more importantly, the international community must take appropriate action.

John H. Monyo

Assistant Director-General
Sustainable Development Department
Food and Agriculture
Organization of the United Nations

Gudmund Hernes

Director
International Institute
for Educational Planning
United Nations Educational, Scientific
and Cultural Organization, Paris

Acknowledgements

We are grateful to many persons for conducting this research and making this book a reality. In addition to the guidance and comments provided by colleagues within FAO and IIEP/UNESCO, several field specialists as well as academics prepared thematic papers and case studies. In particular, we would like to thank Keith Andrews, Daniel Balizet, Djim Momar Cisse, María del Mar Delgado, Daniel Desmond, Candido Alberto Da Costa Gomes, Kate Green, James Grieshop, George Kanyama-Phiri, Michael Lakin, Liu Yonggong, Ma Peifang, Charles Maguire, Cheikh Mbacké Mboup, Dmytro Melnychuk, Eduardo Ramos, Bikas Sanyal, Charlotte Sedel, Bhanu Shiva Reddy, Kla Somtrakool, Aarti Subramaniam, P. Sunanda Rao, Peter Taylor, Ian Wallace, Manuel Zertuche and Zhang Jingzun.

Members of the reading committee included David Acker, Udo Bude, Charles Maguire and John Oxenham. The contribution made by peer reviewers was essential to improve earlier drafts of the publication.

The translation of the publication in French and Spanish was made possible by the kind financial support from the Republic of San Marino.

General introduction

Rationale for the book

*David Atchoarena and
Lavinia Gasperini*

Despite the efforts invested since the 1960s and the mobilization of the international community declared at the Jomtien Conference in 1990, the rural areas of many developing countries are still lagging behind where education is concerned. The fact that the slow pace of progress towards universal basic education is largely due to the persistence of low enrolment rates in rural areas is often overlooked. The rural space is also often at a standstill in terms of economic development.

The big challenge of the new century is the reduction of poverty. Virtually all countries and donors agree on the importance of reducing poverty and its attendant problems of inequity, lack of respect for basic human rights, ill health, lack of knowledge and skills and marginalization of large numbers of people. The figures speak for themselves.

An estimated 1.2 billion people world-wide are classified as poor. In practical terms this equals the current population of China, is more than the population of India and more than four times the population of the United States. A startling fact is that over 70 per cent of the poor, or 840 million in developing countries live in the rural areas. They are caught in the vicious cycle of being unable to access the services and opportunities that might take them out of poverty – education, gainful employment, adequate nutrition, infrastructure and communications – because they are poor.

It is often forgotten that the problem of poverty is first of all a problem of rural poverty and food security. In many poor countries, rural areas have seen little or no economic development and population pressure now constitutes a threat to agricultural resources and the natural environment.

Statistics on the impact of hunger are sobering:

- 36 million people died of hunger or of its immediate consequences during the year 2000 and of these a child below the age of ten died every seven seconds;
- It is estimated that there are 840 million undernourished people world wide, of whom 777 million are in developing countries;
- 180 million children under the age of ten are undernourished.

In addition to the devastating effects of hunger, there are:

- 130 million out-of-school children;
- 860 million illiterate youth and adults.

While it should be noted that these statistics are global, it is reasonable to infer that a major proportion of the poor is rural, illiterate and undernourished.

Today, globalization is posing new challenges to the improvement of living conditions of rural dwellers, especially the poorest. This situation has a profound impact on agricultural incomes and hence on the living conditions of rural populations and on rural poverty. The current situation and trends connected with globalization and the changing rural environment call for new responses.

It is accepted that farmers with basic education are more likely to adopt new technology and become more productive. With basic education they are better equipped to make more informed decisions for their lives and for their communities and to be active participants in promoting the economic, social and cultural dimensions of development. It is equally accepted that excess rural labour has to find work outside the farm, whether in rural or urban settings and that without basic literacy and numeracy, individuals are unlikely to be hired for anything more than basic wage labour.

A community cannot foster development without an educated population. Businesses, large or small, are unlikely to choose to invest in rural areas if skilled or trainable human resources are unavailable. Similarly, a community cannot retain educated people without an attractive economic environment. Many poor rural areas, mostly but not only in developing

countries, are trapped in this situation. Recognizing the central importance of this dilemma, this publication chooses to adopt a dual approach combining, as much as possible, the rural development perspective with educational issues.

A new perspective

In rural areas of low-income countries, the problem of access to education is acute and, in order to take on the enormous challenges involved in providing education for all, a more holistic view of education is needed. In particular, the issue of educational development in rural areas cannot be properly addressed without mentioning the upheavals that have occurred in the agricultural milieu. The fact is that this milieu has changed a lot, as reflected for instance by the shift in rural labour markets towards non-farm employment and by the persistence – or deepening – of rural poverty.

It is clear to the world development community that a multisectoral and multi-disciplinary approach is needed to reduce rural poverty and that we need to work together if we are to be successful in our goal. While there is at present no single solution to the alleviation of rural poverty, education and training are critical elements. Growth needs to be achieved with equity and rural dwellers need to have the capacity to be participants in the labour market and in society.

Education and training are two of the most powerful weapons in the fight against rural poverty and for rural development. Unfortunately, these are also among the most neglected aspects of rural development interventions by national governments and by donors. Since the decade of the seventies, when there was considerable interest and investment in traditional agricultural education, new investments have been few and far between. There are a number of reasons for the declining interest in traditional agricultural education (including vocational education and training, higher education, research and extension). One of these was a false sense of complacency that arose when the famous green revolution appeared to offer limitless science-based solutions to the production of staple grains, especially rice and wheat. To a certain extent, the policy maker felt that agricultural education had solved the problem of food production and turned its attention to other seemingly more urgent challenges. The growth of urbanization and the change in the balance of

political influence also saw policy makers become more attentive to urban issues than to education in rural areas.

Developing countries and the donor community are adopting a fresh approach to rural problems and the traditional focus on agricultural production has given way to a focus on rural development. There is a belief that if poverty is to be reduced and if sustainable rural development is to be a reality, there has to be concern about all the people who live in what is termed the rural space. In the past 'rural' was synonymous with agriculture. Agriculture was the most important economic sector, for it produced vital food supplies and was the largest employer. Despite its strength, agricultural production could not absorb all surplus rural labour, nor could it influence other sectors such as health, education and infrastructure to invest at a level sufficient to transform rural areas. Today, the rural development approach recognizes that there are many different stakeholders in the rural space. Some continue to make a living from agriculture, while others have a wide range of jobs in non-farm occupations, which range from small villages to larger market towns to peri-urban settlements. The concept of rural development is not new but globalization places it in a different context and leads to the rethinking of rural development policies.

The diverse collection of stakeholders in the rural space will need education and training that differ from that available in the past. What is needed today is a broader educational approach serving the needs of diversified target groups and focusing priority on the basic learning needs of rural children, out-of-school adults and youth and the rural poor. This is what we call education for rural development.

The beginning of the new century finds the international donor community, NGOs and national governments agreeing that a main development objective should be to alleviate poverty. Given that 70 per cent of the world's poor are rural and that many of them depend on agriculture and natural resources for income and survival, rural development becomes central to poverty reduction.

The definition of rural development has been further refined to see the process encompassing the rural space rather than seeing it as widening the reach of agricultural development. Within the rural space are to be found, in addition to agriculturalists and a large proportion of the population

classified as poor, a wide variety of communities engaged in various trades and professions. Many of these live in villages, small towns and in peri-urban settings. Their needs for information, education and skills often differ from those who are engaged in farming and who may live in more isolated areas of the rural space. Rural development in the refined definition encompasses agriculture, food-security, education, infrastructure, health, capacity-building, for other than on-farm employment, rural institutions and the needs of vulnerable groups.

In order to bring about significant change, education systems reformers must appreciate the complexity of the rural environment.

The strategy of focusing policies of education for rural development on the expansion of agricultural education at the secondary and higher levels is now viewed as largely obsolete. To meet the challenges facing the rural world today, an integrated view of education is required, centred on access to quality basic education for all. The goals of food security, poverty reduction and meeting the needs of the rural labour market require that rural development policies give priority to basic education and strategies that fully recognize the special nature of the rural environment.

Purpose and scope of the book

With a view to advancing this line of thought and drawing operational lessons from it to guide countries in the reform of their education, training and rural development policies, the Food and Agriculture Organization of the United Nations (FAO) has joined forces with UNESCO's International Institute for Educational Planning (IIEP) to conduct an international study on education and rural development. Resulting from this joint initiative, the first aim of the book is to review the status of the topic from the standpoint of public policies and the conceptual frameworks on which they are based. It will also attempt to shed light on what may be called 'good practice'.

The findings of the study are meant to serve not as models but rather as points of reference for all those who are seeking ways of developing education in rural areas and contributing more effectively to rural development. They will be disseminated widely in the international arena and will lead to consultations with the countries concerned, at the regional and in some cases national levels, and with the donor community, in order

to ensure that rural people's learning needs are truly taken into account in education aid policies. The book will also be a tool to support the operational activities of the Education for rural people flagship, a global partnership initiative co-ordinated by FAO and UNESCO as part of the Education for All strategy.

The review does not pretend to be exhaustive and certain areas, such as extension services and distance education which are dealt with in recent FAO publications, were deliberately left out. Other important areas may have suffered from the choices retained for the study. The selection of country experiences focuses on developing countries and attempts, as much as possible, to balance examples across regions. However, the availability of information did not always make this possible. This book also perhaps places an over-emphasis on description, analysis and policy discussions while avoiding giving specific and practical advice regarding the 'how-to'. The reader in search of ready-made answers will be disappointed by the fact that there are no quick fixes. Rural communities must build human and institutional capacities for development and implement long-term strategies to bring about change. There is thus still very much scope for a solid follow-up consultation process at the national level in working with rural development and education sector stakeholders to continue the process of generating country-specific strategies.

Structure of the book

Chapter I provides a contextual and theoretical introduction to the new rural development and poverty reduction thinking, as well as a discussion on the contribution of education to rural development. In *Chapter II* the book reviews in depth the provision of basic education in rural areas and offers some policy directions for improvement. Further exploring a particular dimension of basic education, *Chapter III* devotes specific attention to strategies linking the formal school teaching with students' life environment, including agriculture, and to garden-based learning. The intention here is to provide updated information and new insights on much-debated aspects which are often associated with rural areas although their application is much broader. *Chapter IV* shifts the analysis from education to work and discusses the implications of the transformation of rural labour markets for skill development. A particular concern is the rise in rural non-farm employment and the need to enlarge

the policy focus from agricultural education and training to technical and vocational education for rural development. This debate is taken further in *Chapter V* which considers higher level skills and the contribution of the tertiary education sector to rural development. Special attention is given to the reform of higher agricultural institutions and lessons based on case studies are provided to document good practice in institutional reform. Finally, *Chapter VI* concentrates on the main findings of the study and discusses policy implications and possible responses for donors and countries.

Each chapter can be read independently to offer the opportunity for readers already familiar with the area of education for rural development to jump directly to their field of specific interest. Policy-makers mostly concerned with key directions for reform may choose to start their reading with the final chapter.

Chapter I

Education and rural development: setting the framework

David Atchoarena and Charlotte Sedel

Introduction

Rethinking education in rural areas requires first reviewing the characteristics of the rural sector, particularly in developing countries, and then considering the place of education in the current rural development debate. To a large extent, rural areas have been neglected in development policies. Similarly, the rural dimension of basic education issues in most developing countries was largely overlooked in the 1990s. However, much has been written on the place of agriculture in primary education and on the impact of education on farmers' productivity. In other words, looking at education in the context of rural development and food security is not in itself a new approach. What has changed lately is the context in which rural development takes place, the conceptual framework in which it is conceived and the ways explored to link the rural environment to learning. This first chapter attempts to set this factual and conceptual background.

Basic facts and figures help in understanding the need to devote more attention to rural areas. It is estimated that for the next two decades, the majority of the population living in developing countries will continue to be rural. This implies that, during this period, the development challenge will continue to be related to rural trends and conditions. Consequently achieving the targets set by the international community for the year 2015, notably regarding poverty reduction and basic education, will require particular emphasis on rural areas.

One important aspect of the debate on agriculture in basic education is the question of whether it leads to increased agricultural productivity. There has often been an assumption that there is a direct causal link between education and agricultural productivity. Whilst the contribution of education to poverty reduction is widely acknowledged, it remains difficult to quantify education's contribution to economic growth.

Agriculture has been ‘taught’ in schools in many countries for a long time, with varying degrees of success in terms of the outcomes expected from its inclusion in the curriculum. The value of agriculture as an intrinsic part of the rural school curriculum where it has been implemented either as a manual activity, added on to the school curriculum (Benin, Burundi, Colombia, Congo, Gambia, Seychelles, Sri Lanka, Uganda, Zambia, to name but a few), or as a distinct subject area in the curriculum (for example Botswana, Côte d’Ivoire, Kenya, Lesotho, Malawi, Rwanda, Swaziland and Tanzania) has been hotly contested for many years. The debate on primary school agriculture quieted somewhat towards the end of the 1990s. Agriculture is often not seen as a priority area due to the many constraints which, in the past, obstructed its effective delivery in primary schools.

However, thinking about the contribution of education to development extends far beyond the school context. As early as the 1970s, the notion of ‘basic education’ was defined in a much broader sense referring to the acquisition of knowledge and know-how in complementary fields such as food, nutrition, hygiene, health, family planning, etc. Hence, the discussion on education and rural development included various forms of non-formal education, including adult literacy programmes.

The rapid review provided by this first chapter is necessary to remind us that the issue of education and rural development is a recurrent theme. While recognizing the uniqueness of the present context and the renewal in rural development concepts and approaches it is important to keep in mind the lessons learned from past efforts to enable education to play its role in rural development and food security.

1. The transformation of the rural context and the new development agenda on rural poverty

1.1 Defining rural areas

Before discussing further rural issues, it seems important to define the term ‘rural’ itself. Different countries may have different perceptions of what ‘rural’ is, making comparisons difficult. According to the FAO, the definition of a ‘rural area’ should meet two criteria: one related to place of residence and land settlement pattern, and the other related to the type of work that residents engage in. First, rural areas are generally open areas, with low settled population densities. A high proportion of the

unsettled land area and/or land used is for primary production (mining, agriculture, livestock, forestry, fisheries). Second, the residents of rural areas are largely dependent – either directly or indirectly – on these primary production activities as their principal, if not their only, source of livelihood. Nevertheless, coming up with a uniform definition of the term ‘rural area’, that all countries can agree on, and which could be applied to any situation has proved difficult, since population-carrying capacity is partly ecologically determined, and since what is ‘urban’ and ‘rural’ may already be politically and administratively defined. For example, there are rural areas in South-east Asia (Bangladesh and Indonesia, for instance) with population densities that may be even higher than some areas classified as suburban or urban in North America or Europe.

Hence, from a statistical perspective, the definition of the rural space varies very much according to countries. Both the criteria used and the threshold can be different. In countries retaining the population criteria, the borderline can be very different, e.g. 2,500 in Mexico, 10,000 in Nigeria. Other countries do not take into account the size of the population but rather the administrative status or the facilities available.

Even within a more homogeneous environment like the European community, the definition of what is rural is not easy, as is reflected in the following statement: “There is currently no precise geographical demarcation of rural areas within the European Community, nor a consistently applied definition of what constitutes a rural population. Under these conditions, any estimate of the rural population, either for a Member State or by region, would only be approximate and could not be used for meaningful comparison” (Bodiguelin Gardou, 1991).

Although there is a common understanding of what is rural, a universal definition does not exist. In an effort to better capture the concept of rurality some authors used a multi-criteria approach, defining rural areas as:

- a space where human settlement and infrastructure occupy only a small share of the landscape;
- natural environment dominated by pastures, forests, mountains and deserts;
- settlements of low density (about 5-10,000 persons);
- places where most people work on farms;
- the availability of land at a relatively low cost; and,

- a place where activities are affected by a high transaction cost, associated with long distance from cities and poor infrastructures (Ashley and Maxwell, 2001).

Some authors add to the list the prevalence of poverty, which remains higher in rural areas, in spite of often considerable urbanization (Wiggins and Proctor, 2001). While such multi-dimensional definitions can help in identifying the main features of rurality, they do not provide a precise instrument that could be of clear practical value. Nevertheless, rural areas are clearly recognizable. In such a situation one is tempted to adopt J. Robinson's attitude by saying that even if we cannot define what an elephant is we are able to tell when we see one.

While such pragmatism may sound conceptually reasonable it does not solve the practical problems of international comparisons. As long as the definition used in national statistics is stable over time, any definition can be applicable. The problem is much more complex when one attempts to compare countries.

Box 1. Definition of rurality: issues, implications, prospects

National statistical offices are in the best position to distinguish between urban and rural-type areas in their own countries (UN/ECOSOC 1998:31). Nevertheless, it is important to have a constant, if incomplete, definition of rurality so that comparisons are feasible. The *UN Demographic Yearbook* classifies populations periodically into size-groups of locality, but only for a minority of nations and usually only down to 20,000.

In its report 'World urbanization prospects' the Population Division of the United Nations defines the rural population as the "population living in areas classified as rural, that is, it is the difference between the total population of a country and its urban population". In the same document the urban population is defined as the "population living in areas classified as urban according to the criteria used by each area or country".

Yet differences in national definitions have serious implications for international comparisons. Suppose that country A (Gabon) sets the rural-urban borderline at 2,000 persons, and Country B (Nigeria) at 20,000 persons. A much higher proportion of the population – and of the consumption-poor, with less than, say, US\$1 a day – will be counted as rural in B than in A, even if the actual distribution of the population among different sizes of

place within A and B is identical. In that case, the proportion of public outlay on health, education, or food relief in rural areas, as officially defined, ought to be far higher in B than in A. And any migration from rural to urban areas will normally seem greater in A than B owing to the definition of 'urban', even if events on the ground in A and B are identical.

One possibility, requiring urgent review, is that the UN system might:

- (a) assist countries to produce standardized international data sets that show changing proportions of persons living in places of different sizes;
- (b) publish census information on places below a common rural-urban cut-off, say 5,000 persons, for use in analytical work;
- (c) publish and track shares of population, women, children, the poor, the illiterate, living not only in places of different sizes, but in places above the rural-urban cut-off population only at the earlier date of an intercensal period. Genuine rises in the urban population share could then be separated from boundary effects.

Source: IFAD, 2001; United Nations, 2002.

1.2 Rural trends and implications for poverty reduction efforts

It is estimated that for the next two decades, the majority of the population living in developing countries will continue to be rural. This is even more the case for the least developed countries where the people living in rural areas will still represent over 55 per cent of the total population in 2030. In other words, during this period, the development challenge will continue to be related to rural trends and conditions. Consequently achieving the targets set by the World Food Summit for the year 2015 will require particular emphasis on rural areas.

In spite of this fact, the decreasing attention being paid to rural issues is probably due to a large extent to global demographic trends and the focus on urbanization and its implications on development. Indeed, the twentieth century witnessed an important redistribution of the world's population towards urban areas. Whereas 66 per cent of human beings lived in rural areas in 1960, by 2000 that proportion had declined to 53 per cent, which however, still constitutes the majority of the world population. Furthermore, most recent projections suggest that the rural population of

the less developed regions will increase very slowly until 2025. As from this period, the rural population of the less developed regions is expected to start declining, following the trend experienced by more developed regions since 1950 (United Nations Secretariat, 2002). Except for Africa and Oceania, the rural population is expected to decline in all areas between 2000 and 2030.

Table 1. Rural population trends by region and development group – 1950-2030

Development group	Population				Growth rate (%)	
	1950	1975	2000	2030	1950-2000	2000-2030
<i>Rural population</i> (in millions)						
– Northern America	62	64	71	61	0.28	-0.49
– Latin America and the Caribbean	97	124	127	116	0.55	-0.33
– Oceania	5	6	8	10	0.98	0.61
– Europe	261	221	193	131	-0.60	-1.31
– Asia	1155	1805	2297	2271	1.37	-0.04
– Africa	188	304	498	702	1.94	1.14
<i>Rural population</i> (in billions)						
– World	1.77	2.52	3.19	3.29	1.18	0.10
• More developed regions	0.37	0.31	0.29	0.21	-0.45	-1.09
• Less developed regions	1.40	2.21	2.90	3.08	1.46	0.20

Source: United Nations Secretariat, 2002.

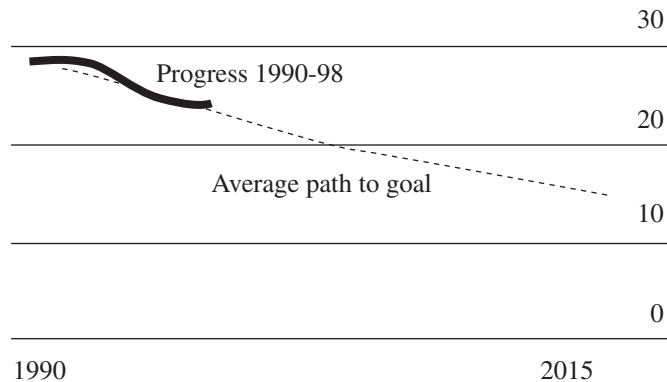
In spite of these global trends confirming the urbanization scenario, available data also document the strength of rurality. It is worth noting that the bulk of the rural population is concentrated in a few countries, 35 nations representing 85 per cent of the world rural population in 2000. In 2030, it is expected that Bangladesh, Pakistan and Indonesia will join China and India in the group of countries recording over 100 million people living in rural areas. The overall population increase experienced during 1960-2000 led to a considerable growth in the size of the rural population from 2 billion in 1960 to 3.2 billion in 2000. This expansion was mainly due to rural demographic expansion in the less developed regions.

Trends in rural fertility and population growth need to be considered for approaching rural development issues. In particular, rural demographic changes have far reaching implications on household income and on poverty.

1.3 Rural areas, poor areas

Poverty has recently re-emerged as the focus of development efforts at the international level. In 1996, countries participating in the World Summit for Social Development committed themselves to eradicate poverty and to eliminate severe poverty within the first decade of the twenty-first century.

Figure 1. People living on less than \$1 a day (%)



Source: United Nations Secretariat, 2002.

For the international community, poverty is now considered as the greatest challenge. Of special concern are the 1.2 billion people living on less than \$1 a day and the additional 1.6 billion living on less than \$2 a day. Poverty reduction efforts take place within a broader development framework agreed upon at the Millennium summit held in New York in September 2000 (<http://www.un.org/millennium/declaration/ares552e.pdf>).

One could expect that such an agenda, including the mobilization against poverty, leads to greater attention paid to rural issues. Indeed, in developing countries rurality often equates to poverty. Yet, in spite of significant rural-urban migration, the great majority of the poor are still rural. Average income levels remain lower in the countryside than in cities and a larger share of the population is living below specified poverty lines.

Box 2. The international development agenda: the millennium development goals

The goals come from the agreements and resolutions of the world conferences organized by the United Nations in the first half of the 1990s. These conferences provided an opportunity for the international community to agree on steps needed to reduce poverty and achieve sustainable development. Each of the seven goals addresses an aspect of poverty. They should be viewed together because they are mutually reinforcing. Higher school enrolments, especially for girls, reduce poverty and mortality. Better basic health care increases enrolment and reduces poverty. Many poor people earn their living from the environment. Progress is needed on each of the seven goals:

1. Reduce by half the proportion of people living in extreme poverty between 1990 and 2015 (see *Figure 1*), and reduce by half the proportion of people who suffer from hunger;
2. Enrol all children in primary school by 2015;
3. Make progress towards gender equality and empowering women by eliminating gender disparities in primary and secondary education by 2005;
4. Reduce infant and child mortality rates by two-thirds between 1990 and 2015;
5. Reduce maternal mortality ratios by three-quarters between 1990 and 2015;
6. Provide access for all those who need reproductive health services by 2015;
7. Implement national strategies for sustainable development by 2005 so as to reverse the loss of environmental resources by 2015.

Source: United Nations Secretariat, 2002.

It is estimated that 1.2 billion people live in extreme poverty, meaning that they spend less than a 'standard' dollar a day. Among them about 75 per cent live in rural areas (IFAD, 2001). Furthermore, despite urbanization, 60 per cent of the world poor are still expected to be rural people by 2020. To a large extent, reducing poverty requires first addressing the challenge of rural poverty. Within the developing world, only Latin America contradicts this view. For that region, as a result of high levels of urbanization, most of the poor live in urban areas. Moreover, the development situation of rural communities differ considerably within one

country according to the degree of access to vital services (roads, marketing facilities, administration, schools, health stations). Well served rural areas are better off than neglected urban slum settlements. This has serious effects on the quality of basic education and the opportunities for development.

The regional distribution of poverty has not changed much over the past decade. It is of course very much related to the relative size of the population in the different regions of the developing world. South Asia remains the region with the largest number of poor and their absolute number has increased marginally in spite of recorded GDP growth. On the contrary, in East Asia, the second largest location by the absolute number of poor, poverty declined significantly due to the economic progress recorded in China. The situation continues to deteriorate in sub-Saharan Africa where the number of poor has been growing due to stagnation of per capita incomes. Africa is the region with the largest share of people living in poverty.

Figure 2. Poverty map



Source: United Nations Secretariat, 2003.

Landless farm workers and casually employed farm labourers often form the majority of the poor in rural areas. However, in Africa, smallholders constitute the largest category of poor. Beyond the occupational dimension, children everywhere are more affected by poverty than adults. In many countries the poverty incidence among women is higher than among men. While available data do not support the view

that, on average, women are poorer than men, they tend to be more vulnerable. Among other reasons, discrimination often results from cultural and institutional factors, such as customary laws.

Table 2. Who are the poor?

Region	Rainfed farmers	Smallholder farmers	Pastoralists	Artisan fishermen	Wage labourers/ landless	Indigenous people; Scheduled Castes/ Tribes	Female-headed households	Displaced people
WCA		✓						
ESA		✓		✓	✓			
AP		✓	✓	✓	✓	✓	✓	✓
LAC	✓	✓	✓	✓	✓	✓	✓	✓
NENA	✓		✓	✓	✓	✓	✓	✓

WCA: West and Central Africa

ESA: East and Southern Africa

AP: Asia and the Pacific

LAC: Latin America and the Caribbean

NENA: Near-East and North Africa.

Source: IFAD, 2001.

The persistence of the poverty issue and the recent focus given to this phenomenon by the international community should not overlook the fact that it is neither a new reality nor a recent policy concern. Evidence of this could be traced much earlier, in the Middle Ages within the Church and later in the sixteenth century when the first signs of a pro-poor public policy appear, including a distinction between rural and the emerging urban poverty (Lautier and Salama, 1995).

More recently, in 1975, the World Bank published *The assault on world poverty – problems of rural development, education, and health*. Already, the concern was that “the largest number of the poor live in the rural areas of the developing world”. Therefore, the publication placed particular emphasis on rural development, stressing that “what are required are production improvements, and mutually reinforcing programs of better nutrition, preventive health, improved water supply, basic sanitation and practical education”. The persistence of the poverty issue on the development agenda illustrates the mixed results of half a century of national efforts and aid.

There are, however, differences between the rhetoric of the 1970s and the new discourse on poverty articulated since the late 1990s. Recognizing the need to listen to the poor probably constitutes a major shift in approach. The wide consultation launched by the World Bank to hear the “voices of the poor” in preparation for the World Development Report 2000/01 on poverty and development probably best illustrates this new posture (World Bank, 2000).

Notably, the new International Bank for Reconstruction and Development/International Development Association (IBRD/IDA) strategy for rural development aims specifically at reaching the rural poor (World Bank, 2002). The document clearly states that poverty reduction objectives will not be met unless rural poverty is quickly reduced.

Putting poverty in a broader conceptual framework also constitutes a feature of more recent approaches. The increasing reference to the concepts of vulnerability and livelihoods mark the search for a better understanding of the environment in which poverty takes place and a shift towards more comprehensive poverty reduction strategies (FAO, 2000*b*). Within a sustainable livelihood framework, reducing poverty does not only involve better income, it also concerns providing broader livelihood-related choices. Expanding livelihood choices involves placing greater emphasis on the interface between agriculture production and other activities. Emerging forms of diversified livelihoods contribute to spreading risk and reducing vulnerability.

Vulnerability of the poor restricts their livelihood choices. In many countries vulnerability has increased recently as a result of a growing prevalence of HIV/AIDS and political disturbance. Poverty-reduction efforts, particularly in rural areas, involve reducing poor people’s vulnerability.

Recognizing the assets and diverse strategies of poor households, the livelihoods approach tends to question the classical farm-based orthodoxy of rural poverty reduction (Ellis and Biggs, 2001). While rural livelihood strategies potentially renew inspiration for conceiving poverty-reduction strategies, their practical implications need to be further articulated.

Thus, the debate on the contribution of agricultural growth to poverty reduction is far from closed. Recent empirical evidence confirms the

poverty-alleviating effects of agricultural growth. While recognizing the value of other development efforts, some authors consider that agriculture development remains the most powerful instrument to reduce rural poverty (Irz et al., 2001).

The continued neglect of rural development priorities can also lead to a host of other problems that can undermine achievement of national development goals. Such problems include illiteracy, the spread of HIV/AIDS and other endemic diseases, as well as increased ‘pushed-out’ migration to urban areas. In turn, this may lead to growth of slums, rising informal under-employment, breakdown of the family, rising social alienation, increased crime (including drug-related crime), increased wealth disparities, political alienation and organized anti-state violence and hence, a need for increased police protection, increased costs of controlling pollution, sanitation, health and so on.

1.4 Poverty, food security and globalization

In spite of the progress made in agricultural production, restricted access to food and inadequate nutrition remain the most visible and severe form of poverty. Hence, under-nutrition and food insecurity persist in many parts of the world.

The 1996 World Food Summit in Rome reaffirmed “the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger” (FAO, 1996). Putting this right into practice requires that everyone, everywhere, can enjoy true food security, which is defined by the FAO as “a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2001*b*).

Today, although enough food is being produced for everyone on earth to be adequately nourished, unfortunately food security is not truly guaranteed – in quantity or quality – anywhere in the world (FAO, 2001*b*). According to FAO estimates, about 799 million people in less developed countries, 11 million in industrialized countries and 30 million in countries in transition are undernourished (FAO, 2002). Two thirds of the undernourished are found in Asia and the Pacific and about one quarter

live in sub-Saharan Africa. The most severely affected countries are located in Central, East and Southern Africa, where about 44 per cent of the population is undernourished.

Table 3. Prevalence of undernourishment, developing countries, 1969-2030

	Percentage of population						Millions of persons					
	1969- 1971	1979- 1981	1990- 1992	1995- 1997	2015	2030	1969- 1971	1979- 1981	1990- 1992	1995- 1997	2015	2030
Developing countries	37	29	20	18	10	6	959	937	828	790	576	401
Sub-Saharan Africa	34	36	34	33	22	15	88	125	162	180	184	165
Near East/North Africa	25	9	8	9	8	6	45	22	25	33	38	35
Latin America and the Caribbean	19	13	13	11	7	5	54	46	59	53	45	32
South Asia	37	38	26	23	10	4	267	337	299	284	165	82
East Asia	43	29	17	13	7	4	504	406	283	240	144	86

Source: FAO, 2000c.

The review conducted by the FAO five years after the World Food Summit displayed mixed results. Although the total number of undernourished in developing countries has declined by 40 million, 93 out of a total of 125 developing countries/countries in transition are experiencing a food deprivation problem. Furthermore, several countries in sub-Saharan Africa, and some in Latin America, have recorded significant declines in per capita food availability since the mid-1980s. According to the FAO, "continuing at the current rate, it would take more than 60 years to reach the target" (set for 2015). In many low income countries, food production capacities are deteriorating as a result of soil erosion, water shortages and demographics. Such a situation leads to the key question: will there be enough food for the over 8 billion people expected on earth by 2030? On the likely assumption that useable farm areas will not increase, it seems obvious that in order to feed every mouth, agricultural productivity will have to increase many times over (Maragnani, 2000).

Figure 3. Percentage of population undernourished, by sub-region, 1996-1998



* Caribbean average is skewed by high malnourishment in Haiti.

Source: United Nations Secretariat, 2002

However, the present pattern of food security shows that resource distribution is a central issue at both the national and international levels. The persistence of hunger is largely due to our inability to spread the increase in agricultural yields more widely and to ensure that available resources are distributed.

The context of the food and agrarian questions in developing countries has changed profoundly over the recent period, owing to the impact of several factors. The first of these is of course the global change in the mode of economic and social regulation, with the continual reinforcement of trade liberalization policies. There have also been major transformations in the modes of production and consumption of agricultural products, and particularly food products. Lastly, the ecological problems raised by the exploitation of natural resources have in many cases become much worse, while on the consumption side the declining quality of food products has been a source of growing anxiety.

The liberalization of national economies and world trade has fundamentally changed the problem of access to foodstuffs and to land:

- liberalization leads to a situation in which the equilibrium between food supply and demand is no longer sought through self-sufficiency

- policies, but through increased trade between countries having a food surplus and countries having a food deficit;
- it also leads to the abandonment of agrarian reform policies in favour of giving encouragement to private farms that are fully integrated into the market economy.

There are tremendous differences of opinion as to the causes of the situation and the policies that should be followed (Berthelot, 2001). These differences have to do with the supply of food products, with the corresponding demand and, most important, with the relations between supply and demand, i.e. with trade, whose foundations are partly ideological and political.

Until the early 1980s, the idea was that a country should consume its own production first. However, food self-sufficiency policies, especially when based on the promotion of non-mechanized agriculture, have often run into economic or political limits. For countries exporting natural resources, the availability of foreign currencies made it easy to acquire food products on the world market. In addition, in many countries, the quality and price of local products did not meet the requirements of urban populations, whose demographic and political importance grew considerably.

More generally, these policies ran afoul of the export policies of countries with food surpluses, which flooded global markets with their products at prices that made it impossible for domestic products to compete. Much of this resulted – and continues to result – from heavy subsidization of agriculture in the European Union and in the USA ('farm bills').

Gradually, the concept of 'self-sufficiency', condemned by advocates of the free market, gave way to that of 'food security', which implicitly involves the concept of trade on the world market. Must we understand 'food security' as an equilibrium between supply and demand at the global level, with surplus producers offsetting the shortages of other countries through their commercial exports and/or their food aid?

Such a conception of food security raises at least three issues:

- relying on the world market to provide food for the national population means subjecting the country's food supply to market fluctuations.

The problem is that, in the context of liberalization, the world market in food products is governed by the 'just-in-time' principle: food stocks and reserves are no longer kept, because they fuel public deficits, which must be eliminated. The consequence of a 'just-in-time' approach is that, in the event of a climatic, economic (devaluation) or political (embargo) shock, countries may partly revert to self-sufficiency policies;

- the least developed countries have little import capacity. They are thus subject not only to market fluctuations but also, and most importantly, to the uncertain nature of the international aid which is supposed to help them reduce their food shortages. If the concept of food security is to have real meaning, it must fully incorporate these two vital aspects: the reduction of poverty and the reduction of vulnerability;
- the economic problem of access to food is closely related to the political problem of control over food systems. As a result, trade is also governed by political forces. In addition, the problem of food security becomes especially acute when the countries suffering from undernutrition and malnutrition have no political power.

On external markets, imports and exports are subject to the extreme instability of the liberalized global market, and hence to the risk of a sudden turnaround in market conditions for the food products in which countries have specialized, in accordance with their 'comparative advantages' – not to mention the fact that agricultural prices on the world market show a strong downward trend over the long term. This can also be the case on the domestic market, where structural adjustment policies often engender a sharp drop in solvent demand.

Although non-mechanized agriculture still employs considerable numbers of people, it is being increasingly marginalized by competition from capital-intensive commercial farms, imports from countries with high agricultural productivity, food aid, and national and international policies that discriminate against small-scale farming. The consequences of this are well known, including rural-urban migration and increased cultivation of illicit crops.

While a market-based response to food insecurity may sound acceptable for the most advanced economies the situation is quite different

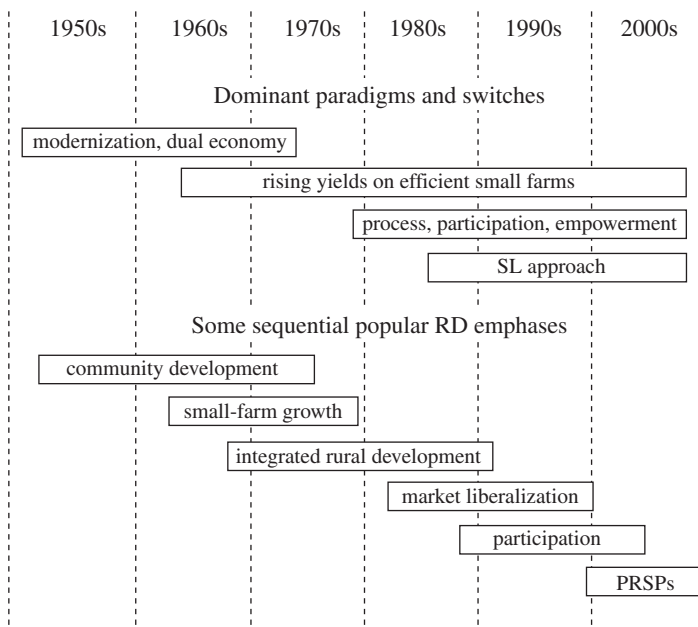
for the low-income, food-deficit countries¹ where most of the people of the developing world live. “The interaction between food security and food production potential is very much a local problem in poor and agriculturally dependant societies. Many situations exist where production potential is limited (...) and a good part of the population depends on such poor agricultural resources for food and more general livelihood. Unless local agriculture is developed and/or other income earning opportunities open up, the food security determined by limited production potential will persist, even in the middle of potential plenty at the world level. The need to develop local agriculture in such situations as the often *sine qua non* condition for improved food security cannot be overemphasized” (FAO, 2001*b*).

1.5 New thinking on rural development

The discussion about education in rural areas is closely related to the broader rural development concept. Like education for rural people, rural development has been a very productive field in development studies (Stamoulis, 2001; Ashley and Maxwell, *op. cit.*). In the 1960s, the Green Revolution reflected a vision of rural development associated with large scale monocrop farming supported by massive state investment. As in education in the 1970s, a significant discourse on the transformation of rural areas and agrarian reform found its inspiration in Marxist theories. In a schematic view, the 1960s could be seen as the period of modernization, the 1970s as the era of state intervention, the 1980s as market liberalization and structural adjustment while the late 1990s stressed concepts and approaches such as empowerment and sustainable livelihoods in a broader context of poverty reduction strategy (FAO, 2000*b*; Ellis and Biggs, 2001). The figure below provides a comprehensive overview of trends in rural development thinking.

1. “Assuming a threshold figure of 5 per cent of a population being undernourished, then 93 out of a total of 125 developing and transition countries (...) can be said to have a food deprivation problem” (FAO, 2001*b*).

Figure 4. Dominant and sequential themes in rural development



RD: rural development

SL: sustainable livelihoods

PRSPs: poverty reduction strategy papers

Source: Ellis and Biggs (2001).

A comparative review of current ideas in rural development and education show much convergence. Today, both domains are now recognizing similar intervention principles, including:

- focusing on poverty reduction;
- recognizing the potential of indigenous knowledge;
- promoting the use of participatory approaches;
- emphasizing community involvement;
- coping with state retreat within the context of structural adjustment programmes and liberalization policies;
- adopting an holistic view of the development of the rural space;
- preparing rural people for off-farm employment by building knowledge and skills capacity;
- understanding the complementarity of urban/rural linkages;

- developing partnerships with NGOs and the civil society;
- focusing on gender issues; and
- focusing on HIV/AIDS issues.

Such parallelism between these two spheres of development thinking and practice suggests that they have much to learn one from another.

Besides recognizing the symbiotic nature of rural development and education, it seems important to underline the current transformation of development thinking and its implications for education in rural areas. To a large extent, for about two decades, development policies have been shaped by two approaches to development which reflected contradictions within the UN system. On the one side, the specialized agencies of the UN put emphasis on social justice and human rights. On the other hand, the so-called Washington consensus promoted a development model based on liberalization, deregulation, privatization and decreasing role of the state generally leading to increased inequalities. Although the associated prescriptions are much more complex, a significant result of this policy mix has been a reduced role for the state in development (Kydd and Dorward, 2001). Many elements of the policy package applied with World Bank and IMF support is recognized to reflect a great deal of good sense, including the fiscal discipline, public expenditures, priorities, tax reform and property rights (Maxwell and Percy, in Stamoulis, *op. cit.*). However, issues such as trade liberalization, privatization and deregulation have been more controversial.

Recent in-depth reviews of the Washington consensus stress the role of government and the need to improve the quality of a country's institutions (Stiglitz, 2002; Easterly, 2002).

The debate about a possible post-Washington consensus is not yet over but is likely to lead to new approaches in development policies, notably in the agricultural and education sectors. In line with the rising concern for food security and poverty reduction, some argue strongly that developing countries' agriculture should be protected by a special device in the WTO (Berthelot, *op. cit.*, Ziegler, 2002²). The need to pay more attention to

2. The recent rapport of the UN Special Rapporteur on the right to food (E/CN.4/2002/58) stresses that "there are profound internal contradictions ... a sort of schizophrenia within the United Nations System. On the one hand, the UN agencies emphasise social justice and human rights. ... On the other hand, the Bretton Woods Institutions, along with the Government of the United States of America and the World Trade Organisation oppose in their practice the right to food with the Washington Consensus, emphasising liberalisation, deregulation, privatisation, and the compression of State domestic budgets."

investment in human capital for agriculture and rural development is also increasingly recognized, starting with basic education (Tomasevski, 2002³).

The recognition of basic education as a prerequisite of sustainable rural development is also visible within the FAO which launched, in 2002, in collaboration with UNESCO, an 'Education for All' flagship on Education for rural people (http://www.fao.org/sd/2002/KN0801_en.htm). Action to promote basic education in rural areas involves:

- (i) targeting multiple stakeholders, focusing on 'Education for All' in harmony with the renewed commitment made by the international community at the World Education Forum held in Dakar, 2000 and on 'Food for All' as stated at the World Food Summit;
- (ii) contributing to placing education at the core of the global and national development agenda and food security agenda, by focusing on the following priorities:
 - expanding access to education and improving school attendance in rural areas;
 - improving the quality of education;
 - finding appropriate ways to incorporate rural development and food security in the basic education curriculum.
- (iii) strengthening institutional capacity in planning and managing education for rural development and food security.

In most countries public policies fail to combine and integrate rural development and basic education. This is often due to the division of responsibility at national level, with usually one ministry having responsibility for education, especially the formal education sector, and perhaps several other ministries (Rural Development, Agriculture, Forestry, Water, Health, etc.) addressing their own remits. Many donors have to work through a particular ministry, and hence donor support tends to be fractionated as well. This is a common and rather depressing picture in terms of the impact of interventions, with efforts dissipated and a lack of co-ordination on the ground where grassroots movements need support. Providing a strong conceptual framework within which support to rural

3. Much effort is currently being made to mainstream the right to education at the global level as reflected in the annual report of the Special Rapporteur on the right to education (E/CN.4/2002/60).

development and basic education can be located should contribute to increased overall policy effectiveness.

2. The contribution of education to rural development: theoretical expectations, empirical evidence and past strategies

2.1 *The gradual recognition of the complex and global impact of education*

2.1.1 Agriculture and economic growth

The development theoreticians of the 1960s viewed agricultural growth as the principal force driving a nation's development. For example, Arthur Lewis wrote in 1954, "if agriculture is in a slump, it offers only a stagnant market and hampers the development of the rest of the economy. If agricultural development is neglected, it becomes more difficult to develop anything else: this is the fundamental principle of balanced growth (Lewis, 1954)".

The idea that agriculture plays an important role in the overall economic growth of developing countries seems to be confirmed by the existence of a correlation between increased agricultural yields and increases in total output. Of the 68 countries for which we have reliable data, 30 saw their agricultural production increase by over 3 per cent annually during the 1970s and 1980s. In all of these countries, the average GDP growth rate was at least 2.5 per cent during the period, and two-thirds of the countries with strong growth of agricultural output also recorded very high rates of economic growth (above 5 per cent a year).

The next question was which factors were favourable to an increase in agricultural productivity. In one of the seminal works of human capital theory, Schultz (1961) observes that education explains the greater part of total factor productivity, and Becker (1964) in the first edition of *Human Capital* formulates this in microeconomic terms.

Human capital theory regards education as an investment "like any other", and as a generator of externalities. For example, individuals make individual choices concerning their education, but this choice has a strong economic impact through the resulting increase in total factor productivity.

The role of human capital in a country's growth was the subject of prolonged debate, and a number of authors have tried to provide an empirical demonstration of the relation between education and agricultural productivity in developing countries. The following section very briefly reviews the main results of these empirical studies.

2.1.2 Human capital theory and empirical estimates

According to human capital theory, the educational level of the agricultural labour force has an influence on agricultural productivity. This relationship may take three forms:

- education can improve the quality of farmers' labour by enabling them to produce more with their available stock of production factors (other than labour);
- education can increase the efficiency of resource allocation;
- education can help farmers to choose more effective means of production by adopting new techniques.

The often cited literature review of Lockheed, Jamison and Lau (1980) reviews the results of 37 surveys conducted to demonstrate the relationship between education and agricultural productivity in 13 developing countries, including 10 Asian countries. All of these studies show that farmers' education has a positive impact on their productivity. According to these results, agricultural productivity is 7.4 per cent higher on average for a farmer with four years of elementary education. This effect is stronger in an environment undergoing modernization than in a traditional environment.

In a complementary but more detailed analysis of 20 Latin American countries, Phillips (1994) reaches the same results as the previous authors but introduces a comparison between Asia and Latin America. The impact of education on output seems to be significantly higher in Asia than in Latin America, but no explanation for this result is offered.

Works dealing with Africa are rarer. Moock (1973; 1981) verifies the existence of a positive relationship between education and labour productivity in maize production in Kenya.

2.1.3 The methodological limits of empirical studies and the need for an holistic approach

Empirical studies conducted to confirm the existence of the education-productivity relationship should be regarded with caution, as levels of education and productivity can be difficult to measure.

(a) Productivity level

Productivity is often measured on the basis of the increase in food production. One of the criticisms of this approach concerns its failure to take the diversity of production systems into consideration: empirical studies generally concentrate on a single agricultural activity, omitting the effects of education on other agricultural production and on non-agricultural activities.

In his analysis of the effects of education on agricultural output in Côte d'Ivoire, Gurgand (1993) isolates the impact of education on total agricultural output, and then on technical efficiency. According to these data, the best-educated rural households in Côte d'Ivoire tend to reduce the share of agriculture in their activities in order to shift to other, non-agricultural activities that generate more income.

This behaviour involves a reallocation of resources that has a negative impact on the relationship between education and growth of agricultural output but can have a positive indirect effect on rural development (see below: Massey *et al.*, 1993). In the last analysis, education has an impact on rural development as a whole and not merely on agricultural output.

The results obtained thus depend on the methodological approach used. Recognition of this fact justifies the transition from agricultural education to education for rural development and food security.

(b) Educational level

- Which member of the family benefits from education?

Different studies have different ways of measuring educational level. Some consider the educational level of the household head, while others consider that of all family members who work on the farm. In addition,

the ‘gender’ variable is rarely considered, even though women play a decisive role in development. These factors make it difficult to compare the results of different studies.

- Which indicator of educational level should be used?

This point has been widely debated owing to the proliferation of economic models that incorporate human capital. In these models, human capital is expressed either as a stock (number of years of schooling) or as a flow (school enrolment rate) (Berthélémy, Dessus and Varoudakis, 1997).

The enrolment rate, measured by the number of children enrolled in school as a ratio of the number of school-age children, often masks large disparities between, on the one hand, urban and rural areas, and on the other, between the sexes. Furthermore, this rate provides no information about educational quality.

Similarly, the stock of human capital, as measured by the number of years spent in school, does not necessarily correspond to a high level of knowledge. The frequency of repeats not only increases the duration of schooling, but also testifies to the low quality of education.

- Which type of education should be considered?

Most empirical studies on the education-productivity relationship are concerned with formal education. Yet education is not limited to the instruction provided in schools, which means that part of the phenomenon is being ignored.

These methodological questions reflect the complexity of the relationship linking education to the growth of agricultural output and to rural development. This connection is all the more difficult to pinpoint because it is influenced by a number of social, institutional, cultural, political and other factors, which in most cases are interdependent (Adelman and Morris, 1967).

In the 1990s many criticisms appeared (Gurgand, 1993; Phillips, 1994; Pritchett, 1996; Orivel, 1995). The critiques do not question the education/agricultural productivity relationship, but they condemn the limitations of an overly narrow economic approach. At the same time, a

consensus was growing about the fact that people should not be seen as a mean but mainly as the final aim of all development strategies.

Since the early 1990s, and in particular as a result of the UNDP's work on the Human Development Index (HDI), a consensus gradually emerged on the fact that development cannot be measured in terms of economic growth alone. Development is a complex and multi-dimensional process that results from a combination of several factors: (1) sustained growth; (2) modification of social and economic structures; (3) technological progress; (4) social, political and institutional modernization; (5) overall improvement in the population's standard of living (Adelman, 2001).

2.2 Education in rural areas: learning from past experiences

Educational policies must not neglect the characteristics and needs of the rural environment. For example, the Addis Ababa Conference of 1961 recognized the necessity of "reforming the content of education in order to adapt programmes to the conditions of rural life, to establish linkages between the school and the local community and to meet the needs and interests of the rural population".

In the 1960s and 1970s, the numerous debates over the role played by education in the growth of agricultural output led to the adoption of a set of reforms in educational systems. The main objective of these reforms was to bring schools closer to the rural world not only by instruction in agricultural techniques but also by the use of new teaching methods.

These policies have often been referred to collectively as 'ruralization', but this is in fact a term that recalls certain practices used under the colonial regime. During the colonial period, ruralization of education was one of the two facets of the colonial strategy: (i) humanistic education to prepare the elites and the staff of the colonial administration; (ii) a second track of practically-oriented education for the rural population.

In the post-independence context, this concept does not reflect the complexity of the efforts to adopt an educational approach that ensures the relevance of education to its environment without the discriminatory purpose explicit in the colonial 'ruralization' strategies.

A first approach attempted to adapt primary education to the specific conditions of life in rural communities by changing programmes and content (Erny, 1977). The purpose of this strategy was to better integrate schools into the rural environment by developing knowledge and practical skills in line with the requirements of the population and by preserving local values.

Summarizing these efforts, the 1982 Conference of Ministers of Education and Ministers responsible for Economic Planning of the Member States of Africa stated that, “educational policies since the late 1960s reflect a concern with putting education, at all levels, at the service of agricultural and rural development. It must be given a ‘rural’ orientation to encourage more pupils to pursue agricultural activities, in order to foster the development of rural areas and as a result to curb migration to the cities”⁴.

2.2.1 Making schools relevant to the rural environment

The reforms and projects implemented to adapt primary education to the specific needs of the rural population aimed to provide functional education and training in order to give children a better knowledge of their environment and to teach them the farming trade. The objectives of these programmes were both economic and social.

In 1975, a seminar organized by the IIEP on “Problems of planning rural education”⁵ suggested that a distinction be made between the ‘ruralization of programmes’ and the ‘ruralization of education’. The former term referred to an overhaul of existing school programmes to promote the acquisition of agricultural skills. The latter encompassed various measures to “provide rural areas with schools, so that all children who live in them receive a primary education”. It may be noted that this distinction was not taken up in the literature on the subject, which indicates not only a certain ambiguity in the notion of ‘ruralization’ but also the gradual shift from the concept of agricultural education to that of basic education in rural areas.

In the early 1970s, several countries (Rwanda, Malawi, Burundi, Ethiopia) received support from the World Bank to overhaul their school programmes in order to make them more relevant to rural development by

4. UNESCO-ED-82/ MINEDAF/ 3.

5. IIEP seminar on “Problems of planning rural education”, 13-17 October 1975.

introducing practical subjects. More generally, many developing countries tried to adapt schools to the rural environment and to agricultural activities. Some of the measures taken to improve the relevance of education were, for instance:

- Productive work in schools

Curricular reforms were aimed at making primary education more relevant, for example by introducing manual activities in rural schools. Certain countries introduced practical subjects to promote the acquisition of occupational skills that could subsequently be used on the labour market. For example, the educational reform undertaken by Rwanda in 1979 aimed to integrate productive work into all levels of primary education. Practical subjects constituted the core of the education provided. The main objective of this type of reform was to integrate primary school pupils into the rural productive process, familiarizing them with agricultural activities in order to enable them – with their parents – to develop the resources available in their environment in an optimal manner (Husén and Postlethwaite, 1994).

Immediately after independence, Mozambique, drawing on the experience of schools in liberated areas during the war of independence against Portugal, introduced productive work as a crucial factor in the development of the new citizen, the ‘new man’ of the socialist tradition. “A relationship of mutual assistance was established between the school and local inhabitants through the exchange of goods and services. Education was both under the responsibility of those responsible for providing it and under that of the community. The space and time devoted to education were different from the space and time reserved for production, but were not separate from them” (Gasperini, 1984).

Botswana training with production brigades led to developments over the decades into a solid experience that will be described in following chapters.

Cuban experience in school gardening was and still is famous all over the world and inspired several other countries (Gasperini, 1976).

In Burkina Faso, the concern for taking the real economic conditions of the country into account in education and training activities led the authorities to set up a system of rural schools as early as the 1960s. Rural

schools were supposed to teach young people who had passed the age for entry into primary school to read and write and to train them in new agricultural methods. The goal was to train modern farmers capable of introducing the changes needed for development.

In Zambia, the education system reform of 1977 consisted of introducing 'production units' in rural schools, with the objective of providing skills corresponding to the needs of the economy, notably for pupils who had left the formal educational system. This reform was thus supposed to allow pupils to learn production techniques and to promote the spirit and practice of self-sufficiency.

Hoppers provides an overview of the variety of national experiences in this respect, pointing out that work-oriented education was aimed at "helping young people to acquire a basic understanding of the technical, technological and organizational aspects of production, as well as a sense of the fundamental value of work in society".⁶

This educational philosophy was in many cases accompanied by an objective of making schools self-financing. Some, such as Benin and Senegal, sought to create 'school co-operatives' capable of generating income. Later on, productive work at school and the creation of school co-operatives came to be seen as stopgap measures in a context of shrinking budgets and structural adjustment.

- School gardens as a specific form of school-based productive work

The use of school gardens was, and to a certain extent still is (see *Chapter III*), a very widespread practice in developing countries. Gardens are used as teaching tools where pupils can put into practice what they have learned. They serve as a means of teaching and learning about farming techniques and of introducing new seed varieties or new and improved technologies. In addition, gardens were seen as a way to provide food to school canteens. In the poorest rural areas, this contribution was also considered as an important source of nutritional supplement for children who do not always receive regular meals. Finally, school gardens were also used to promote respect for manual work, linkages with the community and to teach life skills and ideology (Riedmiller and Mades, 1991).

6. Pfeiffer and Wald, 1988, quoted in Hoppers, 1996.

- Community schools/integrated school

The main idea behind community schools was that “the school should occupy a central position within the village in order to put itself fully at the service of the community; and the education of children should be linked to that of adults” (Erny, 1977). In this perspective, the content of school programmes should be based on the real needs of the community.

As early as 1967, the ‘Arusha Declaration’ presented community schools as a way of creating an education system corresponding to the requirements of agriculture, the dominant sector of economic activity. Primary education was to be “practical, utilitarian and pragmatic” (Ergas, 1974). The idea was to integrate the school into the surrounding community by establishing a two-way relationship: pupils participate in work in the fields, in road construction, etc. and parents become familiar with school activities as part of a large-scale literacy programme. In addition, parents participate in school construction, programme development, etc.

- Languages of instruction

The issue of the language used of instruction has been debated for many years, including during the colonial period. Considering that the mother tongue is the best vehicle for teaching, the 1976 Lagos Conference of Education Ministers strongly reaffirmed the importance of using African languages as the languages of instruction during the first years of primary schooling.

The question is far from settled, as its implications are multidimensional (educational, social, political, economic, psychological, technical, etc.) and the situation on the ground highly complex, if only because of the number of languages (often quite a high number) spoken within a given country.

- School mapping, school calendar and the pace of education

Another strategy for broadening access to primary education in rural areas was to introduce more flexibility in the way schools function. This was done by establishing new primary education structures that were more flexible than the traditional norms and framework. Resorting to multi-level classes, for example, makes it possible to bring provision to areas of low population density. In the rural environment, the so-called ‘double-

shift' system – giving a teacher two groups of pupils, one in the morning and the other in the afternoon – allows pupils to continue to participate in household economic activities. This reduces the opportunity cost of sending children to school and thus helps to improve retention rates. Along the same lines, flexible school hours were frequently introduced in rural areas in order to make the school schedule correspond to the daily and seasonal cycles of agricultural production. The educational reform in Benin in 1977, for example, introduced a modification of the school calendar to bring it into harmony with the agricultural calendar.

The various educational measures implemented to make education more relevant to rural concerns are complementary in most cases. Such measures constitute a multi-dimensional approach that is as much economic and social as educational.

However, these efforts have often run afoul of the many difficulties stemming from the paucity of resources available to governments for the creation of diversified programmes and appropriate teaching aids and for the provision of schoolbooks (King, 1975). Additional problems arose in relation to the establishment of adequate teacher training programmes.

A recurrent problem was often inadequate training of primary school teachers and lack of motivational strategies and incentives. Chengeta (1988), for example, observes that the majority of teachers in Botswana had received no agricultural training and that, as a result, they were not only incompetent to teach this subject but also poorly motivated. This was also the case in Mali, where productive activities at school suffered from the inadequacy of teacher training. In some schools, agricultural equipment was left unused (Diarra, 1991), while in others it was lacking (Gasperini, 1999).

Furthermore, some of these programmes met with hostility from parents, who did not see the point of having their children acquire practical knowledge which they could provide themselves. For families, the decision to send children to school meant enabling them to acquire new knowledge in order to escape from working in the fields and to gain access to wage-earning employment in the cities. For example, the results of a 1980 survey conducted by Riedmiller in 16 Tanzanian villages show that 40 per cent of the heads of household surveyed preferred to see their children acquire a 'non-manual' trade. In a similar study in Cameroon, Bergmann (1985) concludes that parents send their children to school so that they can "escape from rural life and find a job in the city".

This criticism by parents reveals the complexity of the situation, because some studies show, to the contrary, that families did not send their children to school because they were worried that a school irrelevant to their environment would have alienated their children from the family and from the rural environment. In addition, some parents consider it important that schooling should not completely separate their children from their environment.

Slow progress in increasing school enrolments in remote rural areas and the debate over the irrelevance of schooling to the rural environment contributed to the emergence of non-formal education as a valid educational strategy to support, complement or sometimes even substitute the formal system (Evans, 1981).

2.2.2 Non-formal education for rural areas

Thinking about the contribution of education to development extends far beyond the school context. As early as the 1970s, the notion of 'basic education' was defined with respect to the minimum educational requirements needed to enable all individuals to assume their responsibilities as adults (Faure, 1972; UNESCO, 1974; World Bank, 1974). This minimum level of education varies from one group of individuals to another and it refers to the acquisition of knowledge and know-how in complementary fields such as food, nutrition, hygiene, health, family planning, etc. By extension, perceptions of the relationships between education and rural development are broadened through the acquisition of knowledge and of functional capacities that are useful for family life and necessary for the improvement of living conditions (Botti, 1977).

The idea of a continuum encompassing formal, non-formal and informal education, which is widely accepted today in the context of lifelong learning, has its roots in the well-known distinction made by Coombs (1973). Non-formal education is defined as "any organized and systematic educational activity situated outside of the traditional education system and aimed at providing certain types of education to specific population groups, adults as well as children"⁷. One of the objectives of non-formal education is to expand the learning opportunities of children not enrolled

7. Informal education is characterized by "unstructured learning stemming from one's own daily experience and contacts with one's own socio-economic milieu".

in the traditional school system and to meet the needs of the population more effectively. The multiplicity of forms and the flexibility of non-formal education are major assets that promote the adaptation of programmes to various rural contexts. Non-formal education projects are characterized by great diversity, in terms of teaching methods, the subjects taught, financing, objectives, target population and the qualifications of teaching staff.

Coombs and Manzoor (1974) consider various forms of non-formal education in the rural environment. They begin by singling out extension services, which are supposed to favour the transition from subsistence agriculture to market agriculture by disseminating new technologies. Agricultural training aims at the acquisition of specific skills and adopts a more institutional approach. But these authors, writing in 1974, already consider that rural communities must change their behaviour with respect to progress and play an active role in driving development ('co-operative self-help'). Rural development thus demands an integrated approach which, in addition to facilitating access to education and to new technologies, mobilizes a range of factors such as access to credit, to transportation, to health, etc.

The role which non-formal education can play as a complement to or even a substitute for the education system is all the more important because central governments have proved unable to meet the growing need for schooling and because rural dwellers often have little or no chance of continuing their education at the secondary level, either general or technical.

The diversity of non-formal educational projects makes it difficult to arrive at an overall evaluation of their role in agricultural development. However, the first generation of experiments of this type provided many lessons as to what should be done, or not done, to capitalize on the potential existing in the rural environment in order to improve access to education for all (Coombs, 1975).

Experience shows, for example, that it is essential to have the support of the political authorities and the local population in the implementation of educational projects. These projects should thus be in line with a vision of rural development affecting all sectors, including non-agricultural activities.

The use of technology, especially radio and television, as a means of accelerating the process of instruction and literacy training spread widely in the 1950s and 1960s in developing countries. These new technologies were introduced in learning situations in an attempt to break with the traditional 'face-to-face' mode of instruction, which has a high cost (Manzoor and Coombs, 1974). The use of radio saw tremendous expansion, as radio is a mass medium that is well known to rural communities. The results were not always up to expectations, however, notably owing to a tendency to neglect the real concerns of farmers (World Bank, 1977).

In addition, all developing countries organized massive literacy campaigns. Literacy training was claimed to be "a fundamental right of every human being"⁸ and an instrument of socio-economic development. Many studies report on these programmes, which were implemented with varying degrees of success in the 1970s (see especially *The Experimental World Literacy Programme: a critical assessment*, UNESCO/UNDP, 1976, and the proceedings of the UNESCO/FAO Global Conference on Agrarian Reform and Rural Development, held in Rome in 1979).

In simplistic terms, non-formal education may be regarded as having been subject to two main criticisms, relating to its marginal status with respect to the formal education system and to its low social status. For example, most children enrolled in non-formal schools have no possibility of returning to the formal school system. In addition, the non-formal curriculum generally does not lead to a diploma that affords access to the labour market. For these reasons, in many cases people turn to non-formal education not as a result of a real choice but owing to the impossibility of gaining access to the education system (Evans, 1981). This phenomenon may have reinforced the notion that non-formal education is 'cut-rate education' attended only by the most disadvantaged groups, whose future prospects remain limited.

Comparative analysis of the cost-effectiveness of formal and non-formal education projects proves difficult because of their differences of content, target audience, learning objectives, organization, etc. Although in theory non-formal educational structures are supposed to have relatively low costs, in reality, many of them are poorly designed and proved to have low cost-effectiveness (Manzoor and Coombs, 1974).

8. UNESCO, 1975.

This brief account reminds us that the issue of education and rural development is a recurrent theme. Throughout the world, a great many projects and studies have been conducted with a view to enabling education fully to play its role in the agricultural and rural development of developing countries⁹. The results have been mixed: some projects have borne fruit, while others have not obtained the expected results despite governments' genuine will to succeed and the support of international organizations and NGOs.

Thirty years after the debates of the 1970s on the role of education in rural development, it is striking that the same questions are coming up again. Today, however, the international context is no longer the same. Over the last ten years or so, the global environment has been undergoing a radical transformation, with in particular the expansion of the market economy and the growing interdependence of countries and policies in the context of globalization. In this new context, it seems necessary to re-examine the question of educational development through the new problems of rural development and food security. Naturally, this stance must be adopted first at the level of basic education.

9. See for example the results of the IIEP research project conducted in the early 1980s on the theme 'Education and rural development' (Berstecher *et al.*, 1985). A noteworthy comment from this work: "Education 'planned' in conventional ways tends to be dysfunctional to rural development. There is a need in planning today to take a fresh look at the social and political question of how learning needs can best be determined and met ...".

References

- Adelman, I. 2001. "Cinquante ans de développement économique : les principales leçons". In: *Revue d'économie du développement*, 1-2, June. Paris: PUF.
- Adelman, M.; Morris, C.T. 1967. *Society, politics and economic development – a quantitative approach*. Baltimore: Johns Hopkins University Press.
- Ahmed, M. 1983. "Critical educational issues and non-formal education". In: *Prospects*, 13(1). Paris: UNESCO.
- Ahmed, M.; Coombs, P.H. 1975. *Education for rural development – case studies for planners*. New York: Praeger Publishers.
- Ahmed, M.; Coombs, P.H. 1974. *Attacking rural poverty: how non-formal education can help?* Baltimore: Johns Hopkins University Press.
- Ashley, C.; Maxwell, S. 2001. "Rethinking rural development". In: *Development policy review*, 19(4): 365-425.
- Bairoch, P. 1992. *Le tiers monde dans l'impasse*. Paris: Gallimard.
- Berthélémy, J-C.; Dessus, S.; Varoudakis, A. 1997. *Politique économiques et croissances*. Programme de recherche de l'OCDE, Janvier 1997.
- Bergmann, H. 1985. "Agriculture as a subject in primary school". In: *International Review of Education*, XXXI. Hamburg.
- Berstecher, D. 1985. *Education and rural development: issues for planning and research*. Paris: IIEP-UNESCO.
- Berthelot, J. 2001. *L'Agriculture talon d'Achille de la mondialisation – Clés pour un accord agricole solidaire à l'O.M.C.* Paris: L'Harmattan.
- Bhola, H. 1983. "Non-formal education in perspective". In: *Prospects*, 13(1). Paris: UNESCO.
- Botti, M.; Carelli, M.D.; Saliba, M. 1977. *L'éducation de base dans les pays du Sahel*. Hamburg: UIE.
- Bude, U. 1987. *The primary school's role in development: services for the improvement of local living conditions – facts and fallacies from Cameroon*. DSE Workshop series.

- Bude, U. 1989. *The challenge of quality in primary education in Africa. From reform to crisis*. German Foundation for International Development.
- Chengeta, J.G. 1988. *Report on regional agriculture. Syllabus review workshops*, Botswana, 3-30 October 1988.
- Coombs, P.H. 1975. "Education for rural development: some implications for planning". In: *The planning problems in rural education*. IIEP seminar, 13-17 October, Paris.
- Coombs, P.H.; Manzoor, A. 1974. *Attacking rural poverty: how non-formal education can help*. Baltimore, MD: Johns Hopkins University Press.
- Coverdale, G.M. 1974. *Planning education in relation to rural development*. Paris: IIEP-UNESCO.
- Cruziat, A. 1974. *Economie et éducation en milieu rural : panorama des expériences non conventionnelles de formation pour 14 Etats africains et malgaches*. Paris: Secrétariat d'État aux Affaires étrangères.
- Deblé, I. 1994. "Différenciation ou uniformisation ?". In: *Crise de l'éducation en Afrique. Afrique contemporaine* (Numéro spécial). Paris: La Documentation Française.
- Deleon, A. 1978. *L'éducation des adultes comme correctif de l'échec de l'éducation formelle in Perspectives*, VIII(2). Paris: UNESCO.
- Diarra, I. 1991. *Le travail productif à l'école primaire : une analyse de l'expérience malienne*. Paris: IIEP-UNESCO.
- Easterly, W. 2002. *The elusive quest for growth. Economists' adventures and misadventures in the tropics*. Cambridge, MA: MIT Press.
- Ellis, F.; Biggs, S. 2001. Evolving themes in rural development 1950s-2000s. In: *Development Policy Review*, 19(4).
- Ergas, Z. 1974. "Systèmes éducatifs et dynamique du développement en Afrique. Une analyse comparée : Kenya versus Tanzanie". In: *Revue Tiers Monde*, 15, July-December.
- Erny, P. 1977. *L'enseignement dans les pays pauvres. Modèles et propositions*. Paris: L'Harmattan.

- Evans, D.R. 1981. *The planning of non formal education*. Paris: IIEP-UNESCO.
- FAO. 1996. *Rome Declaration on World Food Security and World Food Summit Plan of Action*. World Food Summit. Rome: FAO.
- FAO. 1997a. *Principles for developing an FAO strategy in support of agricultural education and training in: issues and opportunities for agricultural education and training in the 1990s and beyond*. Rome: FAO/SDRE.
- FAO. 1997b. *L'enseignement et la formation agricoles : difficultés et chances*. Rome: FAO.
- FAO. 1999. *Le cadre stratégique de la FAO, 2000 – 2015*. Rome: FAO.
- FAO. 2000a. *Inter-agency experiences and lessons*. Rome: DFID; FAO.
- FAO. 2000b. *Sustainable livelihoods – current thinking and practice*. Rome: DFID; FAO.
- FAO. 2000c. *Agriculture: towards 2015/2030*. Technical Interim Report. Rome: FAO.
- FAO. 2001a. *A compendium of FAO'S experience in basic education: All for Education and Food for All*. Rome: FAO.
- FAO. 2001b. *The state of food insecurity in the world*. Rome: FAO.
- FAO. 2002. *The state of food insecurity in the world*. Rome: FAO.
- Faure. 1972. *Apprendre, ensemble, tout au long de nos vies*. Rapport Faure. Paris: UNESCO.
- Fofana, A. 1997. *Education et travail productif en Afrique : bibliographie annotée (1970 – 1992)*. Series No.17. Dakar: BREDA.
- Gardou, C. 1991. "L'éducation rurale". In: *Cahiers Binet Simon*, 626-627, 1-191.
- Gasparini, L. 1976. "Scuola e lavoro in Cuba socialista". In: *Scuola e Città*, 4 April. Rome: La Nuova Italia.
- Gasparini, L. 1984. "Direction culturelle, éducation et développement au Mozambique". In: *Revue Tiers Monde*, XXV(97), January-March. Paris: Presses universitaires de France.

- Gasparini, L. 1987. *Mozambique, éducation et développement rural*. Thèse de Doctorat de IIIème cycle en Sciences de l'éducation, Sorbonne, Université Paris V.
- Gasparini, L. 1989. *Mozambico, educazione e sviluppo rurale*. Rome: Iscos.
- Gasparini, L. 1999. *The Cuban education system: lessons and dilemmas*. Washington DC: World Bank.
- Griffiths, V.L. 1969. *Les problèmes de l'enseignement en milieu rural*. Paris: IIEP-UNESCO.
- Gurgand, M. 1993. "Les effets de l'éducation sur la production agricole. Application à la Côte d'Ivoire". In: *Revue d'économie du développement*, 4, 39-54.
- Hamadache, A. 1991. "Non-formal education: a definition of the concept and some examples". In: *Prospects*, 21(1), 111-124.
- Hoppers, W.; Komba, D. 1995. *Productive work in education and training – a state of the art in Eastern Africa*. CESO paperback No.21.
- Hoppers, W. 1996. *Searching for relevance: the development of work orientation in basic education*. Paris: IIEP-UNESCO.
- Husén, T.; Postlethwaite, T.N. (Eds.). 1994. *International encyclopedia of education*. Oxford: Pergamon.
- IFAD. 2001. *Rural poverty report 2001: The challenge of ending rural poverty* (<http://www.ifad.org/poverty/index.htm>).
- Irz, X.; Lin, L.; Thirtle, C.G.; Wiggins, S.L. 2001. "Agricultural productivity growth and poverty alleviation". In: *Development Policy Review*, 19(4), 449-466. Overseas Development Institute.
- Jamison, D.; Lau, L. 1982. *Farmer education and farm efficiency*. Baltimore: Johns Hopkins University Press; World Bank.
- Khan Mahmood, H. 2001. *Rural poverty in developing countries, implications for public policy*. Washington DC: International Monetary Fund.
- King, K. 1975. "Curriculum Development for basic education in rural areas" In: *The planning problems in rural areas*. IIEP seminar, 13-17 October, Paris.

- Kydd, J.; Dorward, A. 2001. "The Washington consensus on poor country agriculture: analysis, prescription and institutional gaps". In: *Development Policy Review*, 19(4), 467-478.
- Lautier, B.; Salama, P. 1995. "De l'histoire de la pauvreté en Europe à la pauvreté dans le Tiers Monde". In: *Revue Tiers Monde*, XXXVI(142), April-June. Paris: PUF.
- Le Than Koi. 1974. *Education in rural development*. Paris: UNESCO.
- Lewis, A. 1954. "Development with unlimited supplies of labour". In: *Manchester School of Economics and Social Studies*, 22(2), 139-191.
- Lindsey, J.K. 1975. "Rural education and under-development: aspects of the politics of education" In: *The planning problems in rural areas*. IIEP seminar, 13-17 October, Paris.
- Lockheed, M.E.; Jamison, D.T.; Lau, L.J. 1980. "Farmer education and farm efficiency". In: *Economic Development and Cultural Change*, 29, 37-76.
- Lyons, R.F. 1975. "Administrative and organizational problems in rural education, with special attention to the modalities of community participation in decision-making". In: *The planning problems in rural areas*. IIEP seminar, 13-17 October, Paris.
- Maguer, G. 1997. "Les écoles familiales agricoles: une expérience à vulgariser en Afrique". In: *Communautés africaines*, 60.
- Malassis, L. 1966. *Développement économique et programmation de l'éducation rurale*. Paris: UNESCO.
- Malassis, L. 1973. *Agriculture et processus de développement*. Paris: UNESCO.
- Maragnani, A. 2000. *Dans les pays en développement, quelle démarche d'ingénierie ?* Journées d'études 2000. Paris: Ministère de l'Agriculture et de la Pêche.
- Massey, D.S.; Arango, J.; Hugo, G.; Kouaouci, A.; Pellegrino, A.; Taylor, E. 1993. "Theories of international migration: an integration and appraisal". In: *Population and Development Review*, 19(3), 431-466.

- Mingat, A.; Suchaut, B. 2000. *Les systèmes éducatifs africains – une analyse économique comparative*. Paris: De Boeck University.
- Moock, P.R. 1973. *Managerial ability in small farm production: an analysis of maize yields in the Vihiga Division of Kenya*. PhD Dissertation. New York: Columbia University.
- Moock, P.R. 1981. "Education and technical efficiency in small-farm production". In: *Economic Development and Cultural Change*, 19, 723-739.
- Orivel, F. 1995. "Education primaire et croissance économique en Afrique Subsaharienne : les conditions d'une relation efficace". In: *Revue d'économie du développement*, 1, 78-101.
- Perraton, H.; Jamison, D.; Jenkins, J.; Orivel, F.; Wolff, L. 1983. *Basic education and agricultural extension – costs, effects and alternatives*. World Bank Staff Working Papers, No. 564. Washington DC: World Bank.
- Phillips, J.M. 1994, "Farmer Education and farmer efficiency: a meta analysis". In: *Economic Development and Cultural Change*, 43(1). Chicago: University of Chicago.
- Pilon, M. 1991. *Scolarisation et stratégies familiales – possibilité d'analyse à partir des données d'enquêtes démographiques*. IV^e journée démographique de l'ORSTOM. Paris: ORSTOM.
- Pritchett, L. 1996. *Where has all the education gone?* World Bank Policy Research Working paper No. 1581. Washington DC: World Bank.
- Riedmiller, S.; Mades, G. 1991. *Primary school agriculture in sub-Saharan Africa: policies and practices*. Eschborn: GTZ.
- Riedmiller, S. 1991. *Polytechnical Education Support Programme*. Evaluation Final Report. Eschborn: GTZ.
- Romain, R. 1983. *Lending in primary education: Bank performance review (1962-1983)*. Paris: UNESCO/IIEP/IBRD Education Policy Division.
- Rouse, J. 2001. *Rural institutions and participation service-empowering rural producers' organizations in remote areas*. FAO: Rome.

- Stamoulis, G. 2001. *Food, agriculture and rural development. Current and emerging issues for economic analysis and policy research*. Rome: FAO.
- Stiglitz, J. 2002. *Globalization and its discontents*. New York: Norton.
- Taylor, E.; Yunez-Naude, A. 1999. *Éducation, migration et productivité – une analyse des zones rurales au Mexique*. Paris: OECD.
- Tomasevski, K. 2002. *Statement of the Special Rapporteur on the Right to Education*. United Nations High Commissioner for Human Rights, 58th session of the Commission on Human Rights, 3 April 2002, United Nations.
- Turnham, D. 1993. *Emploi et développement*. Paris: OECD.
- UNDP. 1996. *Human development report*. New York: UNDP.
- UNDP. 2000. *Human development report*. New York: UNDP.
- UNESCO. 1976. *Programme expérimental mondial d’alphabétisation. Evaluation critique*. Paris: UNESCO.
- UNESCO. 1982. *L’éducation et le développement endogène en Afrique: évolution, problèmes, perspectives. Conférence des ministres de l’Éducation et des ministres chargés de la Planification économique des États membres d’Afrique*. Paris: UNESCO.
- UNESCO. 1991. *World education report*. Paris: UNESCO.
- Van Crowder, L., et al. 1999. *Agricultural education for sustainable rural development: challenges for developing countries in the 21st century*. Education and Communication Service (SDRE). Rome: FAO, Research, Extension and Training Division.
- Vidar, M.; Sensi, S. 2001. *The right to adequate food and its interrelations with other human rights*. Rome: FAO.
- Wiggins, S.; Proctor, S. 2001. “How special are rural areas? The economic implications of location for rural development”. In: *Development Policy Review*, 19(4), 427-436.
- World Bank. 1975. *The assault on world poverty – problems of rural development, education and health*. Washington DC: World Bank.
- World Bank. 1991. *World development report*. Washington DC: World Bank.

- World Bank. 2000. *World development report 1999/2000*. Washington DC: World Bank.
- World Bank. 2001. *Afrique : Stratégie de développement rural – de la théorie à la pratique*. Washington DC: World Bank.
- World Bank. 2002. *World Bank rural development strategy: reaching the rural poor*. Washington DC: World Bank.
- United Nations Secretariat. 2002. *World urbanization prospects. The 2001 revision, data tables and highlights*. United Nations Secretariat, Population Division, Department of Economic and Social Affairs.

Chapter II

Basic education in rural areas: status, issues, and prospects

Michael Lakin with Lavinia Gasperini

Introduction

The lack of basic learning opportunities is both a contributing cause and an effect of rural poverty in the low-income countries. Even where schools exist, various economic and social obstacles prevent some children, especially girls, from enrolling. The opportunity cost of schooling is one of the main obstacles for poor families, who often count on their children's labour and earnings. Also, 'school learning' may appear quite irrelevant with respect to their more immediate survival needs.

In general terms, rural children and adults – most of whom are poor – have very limited opportunities to obtain a viable basic education that would help them break out of the poverty cycle. Many rural children never enter a school; many of those who do enrol fail to complete the full primary cycle and even among those who do complete it, many leave school barely literate. The curriculum and sometimes the language of instruction are not suited to local conditions. Rural schools are often in poor repair, poorly equipped and staffed with poorly prepared and poorly paid teachers. Programmes targeting rural adolescents and adults often are not well organized, nor well adapted to local learning needs and depend on untrained or poorly trained, low-paid personnel. Such programmes are difficult to expand or even sustain. Furthermore, rural learners of whatever age are generally at a disadvantage in comparison with their cousins in the city who have access to relatively better educational opportunities – which are often still well below the standards aimed at in government policy.

Section 1 of this chapter examines urban/rural disparities. It analyzes how disparities related to access to basic education in rural areas result from issues such as the inadequate geographical distribution of schools, the incompleteness of the schools, economic and social obstacles such as

direct costs, gender-specific issues, legal obstacles, and conflicts and war. It also identifies some of the causes behind low quality basic education such as curriculum content, lack of availability and low quality of school inputs, the physical school environment, home environment, health and nutrition, distance from school, language of instruction etc. It then analyzes alternative modes of delivery of basic education such as non-formal basic education.

Section 2 examines several examples of initiatives by governments and by non-governmental organizations to reach various categories of learners. It indicates that despite the shortcomings in the provision of basic education in rural areas today, and despite the chronic shortfall in resources allocated for it, progress in access and quality is possible and is being made.

Section 3 identifies some key actions to be undertaken by policy-makers and managers to improve basic education in rural areas.

Meeting basic learning needs in rural areas

The *World Declaration on Education for All* (1990) states in its first article that “Every person – child, youth and adult – shall be able to benefit from educational opportunities designed to meet their basic learning needs”. It goes on to say that these needs comprise essential learning tools, such as literacy and numeracy, as well as the knowledge, skills, values and attitudes people require to function well and continue learning in their particular environment. It also acknowledges that “the scope of basic learning needs and how they should be met varies with individual countries and cultures and inevitably changes with the passage of time”.

In examining the provision of basic education in rural areas, one should bear in mind that social conditions there are changing and the rural economy is becoming more diverse, with expanding opportunities for off-farm employment. These changes necessarily influence what constitutes the *basic learning needs* of rural people. Although there are certain constants, such as literacy and numeracy skills, the basic learning needs of rural children and adults today are probably more extensive than those of a generation ago and these learning needs continue to evolve. This means that the content and delivery of basic education will have to evolve as well.

Governments in many developing countries are trying to shape the evolution of rural life through economic development policy. The Green Revolution, for example, brought many changes to rural life in addition to increased agricultural production. Other changes are occurring in response to market forces that signal changing priorities for rural products and employment. In addition to meeting currently neglected learning needs in rural areas, basic education must respond to these changing economic and social conditions in order to be relevant and effective.

Before going further, certain terms found in the literature deserve some clarification. *Basic education* refers to a whole range of educational activities that take place in different settings and that aim to meet basic learning needs as defined in the World Declaration on Education for All. It thus comprises both formal schooling (primary and sometimes lower secondary) as well as a wide variety of non-formal and informal public and private educational activities offered to meet the defined basic learning needs of groups of people of all ages.

The term *rural education* has often been used to distinguish rural schooling from urban schooling. However, the term sometimes has a connotation suggesting a kind or quality of education that differs from education in urban areas. In any case it should not be confused with *agricultural education*, which prepares learners specifically for work in the agricultural sector.

Some recent literature uses the term *education for rural transformation* “to convey a vision of [a] pro-active and positive process of change and development of rural communities in the context of national and global changes. Education is seen as [a] key instrument for shaping and fulfilling the goal of rural transformation.” (INRULED, 2001).

The present contribution, however, uses the term *education for rural development*, which implies that the function or purpose of education in rural areas is or should be to contribute to rural development and well-being, including food security, health, employment, protection of the environment and management of natural resources. It envisages a broad educational approach to meet effectively and equitably the basic learning needs of rural children, out-of-school youth and adults, in the perspective of reducing rural poverty (Gasperini and Maguire, 2001). The following

section will examine the actual situation in respect to this positive vision of education in rural areas.

1. Basic education in rural areas today

In recent years, the provision of basic education in rural areas, or at least how it is viewed, has been heavily influenced by two main currents of development policy. The first, proper to the education sector itself, derives from the World Conference on Education for All: Meeting Basic Learning Needs (Jomtien, Thailand, 1990). Providing *basic education* for all children, adolescents and adults, through formal and non-formal education, is now understood to be not only a fundamental obligation of any government that claims to respect human rights, but also to be a necessary prerequisite for social and economic development. The commitments to Education for All undertaken at Jomtien by governments and the many development agencies present there were reinforced at several United Nations' conferences during the 1990s, beginning with the World Summit for Children (also in 1990). Their respective final acts underscore the important and even vital contribution that basic education for all can and must make in respect to the rights of the child, the rights of girls and women, protection of the environment, social development, food security, etc. Although – except for a few documents such as the plan of action of the 1996 World Food Summit, there are few specific references to the educational needs of rural populations, these several world-level agreements have created a favourable policy environment for renewed initiatives to expand and improve education in rural areas. The subsequent efforts by countries, supported by the international community, to provide basic education for all has drawn attention once again to the necessity of increasing rural school enrolments, particularly of girls. However, less attention has been given so far to improving the quality of rural schooling and to meeting basic learning needs of out-of-school children and adults.

The second and concurrent influence on basic education in rural areas has been the world community's renewed commitments during the 1990s to alleviate poverty and give increased attention to helping the poorest in the poor countries. This has helped underscore the importance of meeting the basic learning needs of the three-quarters of the world's poor who live in rural areas (IFAD, 2001). This current of development policy views basic education as a necessary and potent instrument to make improvements

in various domains, such as family health, food security, employment, productivity and democratic behaviour. Now that adult illiteracy is widely recognized to be a major obstacle to poverty alleviation, there seems to be growing awareness – not yet matched by resources – that providing basic education for adults is a necessary complement to primary schooling. Progress in providing basic education for children and for adults in rural areas can produce significant positive synergies and contribute to reducing the urban/rural gap in educational opportunity. What is the situation today?

1.1 Primary schooling

1.1.1 Access to primary schooling in rural areas is deficient

Rural children in low-income countries generally still have less opportunity to attend and complete primary school than do children in the better served urban areas. If not addressed, this situation will become even worst in the coming decades. Unfortunately, internationally comparable education statistics rarely distinguish urban and rural data even concerning school enrolments and urban/rural data on grade repetition, dropout and promotion are very scarce. *Table 1* on the following page contains some illustrative urban/rural data by gender, as reported by a selection of countries, ranked by the percentage of their rural population. It shows gross (all ages) and net (official age group) enrolment ratios in primary schooling for urban boys and girls and rural boys and girls.¹ Usually, the rates are higher in urban than in rural areas, and the rates for boys exceed those of girls. The table also shows that the official age group and duration of primary schooling varies from country to country. Countries having gross enrolment ratios (GER) approaching or exceeding 100 per cent have, in principle, the facilities to provide primary schooling for all children in the official age group if the presence of over-age children were eliminated. Even so, the geographical distribution of schools in most developing countries is not adequate to reach all rural children.

Although some rural areas lack schools altogether, another common phenomenon is the *incomplete school* that offers instruction in a few but not all primary grades. Children who are thus obliged to leave school at age nine or less with only two or three years of schooling have a very

1. *Table 1* is based on country reports to UNESCO for school years beginning in 1997 or 1998, each country defining 'urban' and 'rural' in its own way.

limited 'basic education' and are prone to losing their literacy and numeracy skills.

Even where schools exist, various economic and social obstacles prevent some children from attending them. The opportunity cost² of schooling is one of the main obstacles for poor families, who would lose the income or services derived from their children's labour, either in the home or in the fields or in other work places. 'School learning' may appear quite irrelevant and unnecessary in respect to their more immediate survival needs. Consequently, schooling must offer an attractive and affordable alternative in order for such families to accept to enrol their children in school, forego their labour and pay the direct costs of schooling, such as fees, books, materials and uniforms. In many developing countries child labour remains a considerable obstacle to EFA. Introducing more flexibility in the delivery system, particularly but not only concerning timetables, represents an important challenge to address the specific needs of working children.

2. The opportunity cost of a decision (e.g. going to school) is the value of the foregone alternative decision (e.g. working).

Table 1. Literacy and primary school enrolment rates for selected countries distributed by urban and rural areas and by gender

Country	Rural pop.	HDI 1999	Total literacy	Female literacy	GER UM	GER UF	GER RM	GER RF	NER UM	NER UF	NER RM	NER RF	Primary school
(Ranked by rural pop)	%		%	%	%	%	%	%	%	%	%	%	ages
Cambodia	84.4	0.541	68.2	...	104.6	94.1	92.6	80.7	88.0	81.0	80.8	71.9	6-11
Niger	79.9	0.274	15.3	7.9	55.6	47.5	33.2	17.1	45.1	38.4	28.8	15.0	7-12
Lao P.D.R.	77.1	0.476	47.3	31.7	129.1	120.7	124.1	100.4	91.0	90.3	77.9	69.2	7-10
Bangladesh	76.1	0.470	40.8	29.3	98.4	94.5	98.4	94.5	81.8	84.0	79.6	82.7	6-10
India	71.9	0.571	56.5	44.5	91.0	86.8	101.1	79.6	71.7	68.2	79.7	62.5	5/6-9/10
Comoros	67.3	0.510	59.2	52.1	81.0	71.4	108.1	91.6	48.8	43.9	72.9	61.2	6-11
Guatemala	60.6	0.626	68.1	60.5	89.1	84.8	106.1	91.1	75.4	73.2	83.9	75.5	7-12
Mauritius	58.9	0.765	84.2	80.8	114.1	116.0	97.8	99.0	100.0	100.0	93.9	97.4	6-11
Honduras	48.4	0.634	74.0	74.1	121.4	124.2	84.4	86.1	100.0	100.0	76.1	77.0	7-13
Morocco	44.7	0.596	48.0	35.1	100.3	94.3	89.3	61.3	79.0	77.2	71.6	52.9	6-11
Paraguay	44.7	0.738	93.0	91.9	102.5	104.6	124.9	116.2	84.8	87.8	97.8	95.9	6-11
Romania	44.1	0.772	98.0	97.1	97.5	97.5	90.2	89.3	90.2	91.4	83.0	82.8	11-14
Kazakhstan 1)	43.6	0.742	99.0	...	98.6	99.0	99.9	96.7	99.0	98.4	98.8	97.1	6-
Mauritania 2)	43.6	0.437	41.6	31.4	91.0	94.7	89.3	83.2	62.0	63.0	67.0	62.0	6 years
Philippines	42.3	0.749	95.1	94.9	118.5	120.0	118.3	119.2	97.1	91.5	98.5	93.2	7-12
Georgia	39.8	0.742	99.6	...	92.7	94.7	97.8	95.9	92.4	94.4	97.6	95.3	6/7-9/10
Iran, Isl. Rep	38.9	0.714	75.7	68.7	110.2	107.0	111.1	96.3	100.0	100.0	95.0	85.4	6-10
Macedonia FYR	38.4	0.766	94.0	...	106.0	104.5	91.9	85.6	95.5	100.0	89.0	83.1	7-15
Latvia	31.0	0.791	99.8	99.8	107.8	108.2	90.1	85.8	100.0	100.0	81.2	77.4	7-10
Colombia 3)	26.5	0.765	91.5	91.5	101.2	102.0	107.0	105.4	82.3	8	72.9	8	6-10
Jordan	26.4	0.714	89.2	83.4	94.9	95.0	87.7	85.4	88.0	88.6	81.0	79.4	6-11

Legend

HDI = Human Development Index; GER = gross enrolment ratio; NER = net enrolment ratio;
 UM = urban male; UF = urban female; RM = rural male; RF = rural female
Source: Country data reported for the Education for All 2000 Assessment (unpublished).

Notes

- 1) GER is apparent intake rate; NER is net intake rate
- 2) U refers to the capital, Noakhott; R is the national average
- 3) NER are combined ratios for M+F

Box 1. Reasons given for not attending school – rural children, 6-17 years – India (1998-1999)

Main reasons given	Never attended school		No longer attending	
	Boys	Girls	Boys	Girls
School too far away	3.8	4.5	1.0	5.9
Ed. not considered necessary	7.8	13.1	2.3	4.3
Required for household work	6.7	15.5	8.7	17.3
Required for other work	5.2	3.4	9.2	2.9
Required for care of siblings	0.9	3.0	0.6	2.3
No proper facilities for girls	- -	2.6	- -	3.5
Got married	- -	- -	0.2	8.5
Costs too much	25.8	23.8	13.3	11.4
Not interested in studies	25.7	15.9	40.0	24.8
Other reasons & don't know	24.1	18.2	24.7	19.1

Source: Reddy, 2002.

Box 1 shows an illustrative list of reasons given for the non-attendance of children as reported during a recent survey in rural districts of India. Direct costs (e.g. books, pencils, uniforms, fees) were cited in a quarter of the cases of children who had never attended school and were given as a main reason why about one eighth of the children were no longer attending school. Another main cause of non-attendance was “not interested in studies”, which is given more importance for boys than for girls. Of course lack of scholastic achievement may underlie some of the responses. Although the results of this survey cannot be generalized to all other developing countries, they do give some idea of the kind and importance of reasons that may explain the non-enrolment of rural children. Other lists might refer to administrative obstacles (e.g. official birth certificate required for admission), discriminatory practices, poor health, hunger, unfamiliar language of instruction, fear of violence and disruption due to armed conflicts. These various reasons for not attending school are discussed later in this section.

Additional, gender-specific concerns often underlie the non-enrolment of girls. Local traditions may favour boys' education and give little value, or even a negative value, to a girl's schooling. Fears that a daughter may become unmarriageable or be drawn to the city away from family surveillance need to be confronted. Parents are often worried about their daughter's safety in school and on the way to and from school. Unless such worries can be allayed, girls will continue to be unenrolled or withdrawn from school, especially as they approach puberty. *Box 2* below presents a categorization of many more factors that determine the under-education of girls in a range of situations, both urban and rural.

In some countries, there are also legal obstacles to schooling such as the lack of birth certificate in rural areas (e.g. Egypt) or the denial of citizenship to certain rural ethnic minorities (e.g. Thailand).

Finally, war and conflicts, which affect mostly rural areas, disrupt the provision of educational services and impede access and regular attendance.

Box 2. Factors determining the under-education of girls

Factors relating to the availability of education

Institutional and political factors

- The existence of policies tending to exclude girls and women
- Political instability, social tensions, wars
- Absence of clear policies and strategies for the education of girls and women
- Under-representation of women in decision-making areas
- Weak legislation on the official age for first marriage, sexual abuse and discrimination against girls
- Weak legislation on school entry age

School-related factors

- Inadequacy of school infrastructure: absence of toilets for girls or protection fences for schools, etc.
- Large distances between school and home
- Insufficient number of women teachers

Factors relating to the demand for education

Socio-economic factors

- Poverty of parents
- High direct costs of schooling
- High opportunity costs
- High demand for female labour for household and agricultural work
- Low pay for female labour
- Difficulty in finding work after completing schooling
- High demand for female labour to provide food for the family

Socio-cultural factors

- Low social status of women and negative image of the role of women in society
- Negative perception of the education of girls and women
- False interpretation of religious principles

- | | |
|--|---|
| <ul style="list-style-type: none"> • Absence of acknowledgement of the specificity of women in school manuals and curricula • Gender stereotypes in schoolbooks • Discriminatory attitudes of men and women teachers • Lack of awareness of gender issues amongst teachers • Exclusion of pregnant girls from school • Sexual harassment • Lack of school canteens (especially in nomadic and rural areas) • Not enough girls' schools • Inexistent or inadequate dormitory facilities in schools | <ul style="list-style-type: none"> • Early marriages and pregnancies • Over-importance given to dowry • Low educational level of parents • Low ambitions in girls • Difficulty for educated girls to get married |
|--|---|

Source: UNESCO and WFP, undated, citing UNESCO/Forum of African Women Educationalists/World Bank.

Effective access to schooling involves more than initial enrolment. Regular attendance is a minimal requirement, which unfortunately is often not met in rural schools. Health problems, malnutrition, domestic demands on children's time and seasonal demands for their labour in the fields all take their toll on attendance and therefore on learning achievement. Disrupted learning can lead to grade repetition, which in turn leads to over-age children filling primary school classes. Also, repetition is often linked to dropout. These interrelated phenomena are not unique to rural schools, but they deprive a larger proportion of rural than urban pupils from obtaining a viable basic education.

Table 2. Indicators of efficiency in primary schooling – selected countries reporting 1998 data

Country (Ranked by rural pop.)	% Rural pop. 2000	Repetition rate (%)	% Survival to grade 5	Efficiency (coefficient)
Afghanistan	93,10	---	48.8 §	53.7 §
Bhutan	92,90	14.4	86.2	74.1
Cambodia	83,10	24.9	45.2	39.5
Niger	79,40	13.4 *	65.5	65.1
Yemen	75,30	11.0	74.4	70.8
Bangladesh	75,00	---	70.3	75.7
India	72,30	---	52.3 *	66.6 *
Pakistan	66,90	6.3	49.7 *	68.3 *
Comoros	66,80	25.3	48.4 §	42.8 §
Kyrgyzstan	65,60	0.5	89.2	94.5
Zimbabwe	64,70	---	73.3	86.1
China	64,20	---	90.5	---
Indonesia	59,00	6.4 *	85.3 *	88.3 *
Egypt	57,30	---	91.7	91.7
Senegal	52,60	14.0	82.1	80.0 *
Syrian Arab Rep.	48,60	6.0	91.6	85.8
Honduras	47,30	9.2 §	58.0 *	61.4 *
Morocco	44,50	13.0	74.6	65.5
Georgia	43,70	0.5	98.1	98.6
Algeria	42,90	12.0	95.0	84.1
Philippines	41,40	---	69.4	---
Costa Rica	41,00	11.2	89.0	83.6 *
Bolivia	37,60	---	47.1	54.9
Tunisia	34,50	20.0	91.6	---
Peru	27,20	10.7	86.6	80.3
Mexico	25,60	8.3 *	85.0 %	93.8
Brazil	18,10	---	66.2 *	78.0
Qatar	7,30	5.0	87.5	80.4
Kuwait	4,00	7.0	96.7	88.4

Notes: * = 1997; § = 1999; all other data are for 1998.

Source: Country data reported for the Education for All 2000 Assessment.

Table 2 presents three indicators of the internal efficiency of primary schooling in a number of low-income countries (urban and rural areas combined; ranked by percentage of rural population). It shows considerable variation between countries in repetition rates (the percentage of pupils enrolled in the same grade for two consecutive years) and in survival rates to grade 5 (the percentage of a pupil cohort entering school together that actually reaches grade 5, with or without repeating a grade). Less than

seven out of ten pupils finally reach grade 5 in ten of the 29 countries listed, whereas only nine countries have survival rates around or above 90 per cent. The third variable, the coefficient of efficiency, is obtained by dividing the number of pupil-years normally required to complete the primary cycle by the number of pupil-years actually spent. Thus, higher coefficients indicate greater efficiency, pupils spending on average less time to complete the primary education cycle. Although these data do not show the disparities between urban and rural areas, there appears to be a weak inverse correlation between the efficiency factors and the rurality of a country. In any case the data do illustrate how pervasive the problem of primary schooling 'wastage' is, rural pupils typically spending far too much time in primary education.

During the 1990s, two main causes of disrupted schooling, particularly in sub-Saharan Africa, were the numerous armed conflicts that have uprooted thousands of people, mainly in rural areas and the growing HIV/AIDS pandemic that has severely reduced the number of teachers and left thousands of AIDS orphans. This situation was noted in strong terms in the African regional framework for action reported to the World Education Forum (Dakar, April 2000):

The number of students dropping out of school has increased alarmingly in recent years, mainly due to increased costs or armed conflicts. Participation [school attendance] is particularly low amongst children in remote and rural areas, those with disabilities, refugees and internally displaced people, working children, ethnic minorities and those affected by HIV/AIDS, conflict and other emergencies that have spawned an increasing number of orphans. The poor from rural areas continue to stream into our cities where schools are already overcrowded (UNESCO, 2000*e*).

For those rural pupils who manage to complete the primary cycle, opportunities for further study are quite limited, much more so than in urban areas. Rural secondary schools are far fewer and even less well distributed than rural primary schools. Very few have hostels or other boarding arrangements, so unless families can find suitable accommodation for their child in proximity to a secondary school (an expensive and worrisome solution, especially for girls), distance selects out many potential pupils. Possibilities for distance education offer an alternative to schooling in some countries, but its potential remains largely unexploited for basic

and secondary education. Apart from the occasional rural library or extension centre, other opportunities to continue self-study are still rare in rural areas.

1.1.2 Quality

1.1.2.1 The content of the primary school curriculum

The content of the primary school curriculum and the perception families have of it, is another important factor sometimes contributing to low enrolment and poor attendance in rural primary schools. Most developing countries have a unitary, centrally determined curriculum, which is generally designed for pupils familiar with an urban environment and may contain elements that conflict with local customs and beliefs. This 'urban bias' complicates the task of rural teachers and makes learning that much more difficult for rural children, who see little relevance of some subject matter to their own experience and to life in their community. When school learning is perceived to be irrelevant to rural life and likely to draw children to the city, parents may see no point in sending their sons and especially their daughters to school. Yet, some efforts to 'ruralize' the curriculum have been confounded by parental objections to what they view as a sub-standard education offered to their children (Moulton, 2001).

However, perceptions of irrelevance can be exacerbated when the language used in school differs from the language spoken in the community or in the home. This can also pose problems for locally recruited teachers who do not master the official language of instruction. In any case, young children obliged to learn in an unfamiliar language have an additional obstacle to overcome and are put at a great disadvantage in respect to other children learning in their mother tongue. This language constraint on learning applies more to rural communities than to urban areas, where people are more likely to have some knowledge of the country's official language even if they have another mother tongue.

1.1.2.2 The quality of primary school inputs

The quality of primary school inputs (e.g. teachers, facilities, materials) also affects school enrolment, attendance and completion rates. A good school gains parents' respect and tends to attract and retain pupils. Teachers are a key 'input', but the rural teacher is generally poorly trained,

supervised, supported and remunerated. Many teachers must cope with ill-equipped classrooms overcrowded with children of several ages. Difficult working conditions combined with a low salary that is often paid late tend to sap the morale of even dedicated teachers. Teachers of urban origin are often reluctant to take up rural assignments, and those who do accept are hard to retain in rural communities. Another serious problem in many rural communities is the frequent tardiness or absence of teachers, whether due to ill health or to other employment to make ends meet. A still more discouraging phenomenon reported by many countries is the disappearing teacher, often a victim of the HIV/AIDS pandemic.

The quality of instruction depends as well on the availability of adequate and culturally relevant textbooks, suitable writing materials for pupils, such as pencils and workbooks, as well as teaching aids, such as maps and blackboards. Very often such basic supports for learning are lacking, both in quantity and quality, in rural schools.

The physical environment of the school, beginning with its proximity to the pupils' homes, also determines to a large extent the quality of schooling. Other important physical factors include the climatic suitability of the building; the adequacy and repair of the classrooms and other facilities; ventilation and lighting; the existence and condition of a playground, a garden and toilets for the children (separate for boys and girls); and the supply of electricity and drinking water. *Table 3* below shows urban and rural data resulting from sample surveys of school facilities conducted in seven African countries.

Table 3. School facilities in selected African countries

% schools having school facilities	Burkina Faso	Cameroon	Congo	Côte d'Ivoire	Madagascar	Mali	Senegal
Water supply							
Urban	83.6	65.6	--	61.1	--	--	79.7
Rural	62.3	22.0		61.5			43.2
Electricity							
Urban	32.8	5.8	--	50.9	80.8	90.3	91.9
Rural	2.2	28.0		15.6	69.2	69.1	93.9
Pupil toilets							
Urban	68.7	78.7	--	50.0	--	--	79.7
Rural	52.8	47.5		33.8			43.2
Blackboard							
Urban	94.8	94.7	98.2	98.1	92.3	98.6	95.2
Rural	91.3	95.2	78.9	89.1	95.4	97.5	90.0
School library							
Urban	7.5	9.8	4.6	9.3	--	--	15.6
Rural	3.8	5.1	0	10.8			4.5
Playground							
Urban	88.1	89.9	--	96.3	--	--	95.3
Rural	88.7	64.4		0			79.5
% pupils with sitting place							
Urban	87.9	89.9	--	--	94.2	79.2	84.6
Rural	82.6	94.8		90.6	12.3	69.1	82.0

Source: Monitoring Learning Achievement (MLA) Project, 2002.

With few exceptions, urban schools were found to be better equipped than rural schools, especially with respect to the supply of water and electricity. Also, the physical deterioration and general disrepair of school buildings in rural areas are frequently noted in inspection reports.

1.1.2.3 The home environment

Another very important factor in the quality equation is the pupil and the home environment. Children who have had good intellectual stimulation and language training, either at home or through participation in an early childhood development (ECD) programme, are well prepared to learn in school. Unfortunately, this is not the case for many rural children. Also, as noted earlier, children coming from a home with a language other than the school language have another obstacle to overcome.

Furthermore, the fatigue experienced by children burdened with time-consuming household chores or who must walk long distances to attend school also undermines their learning in school and at home. Finally, children who receive little or no supervision or help with their studies at home are also at a disadvantage; this is more likely the case for rural children than for urban children as illustrated by data on homework assistance from surveys in India and Mexico shown in *Table 4* below.

Table 4. Percentage of children receiving assistance with homework, by source and by urban or rural area

A. Mexico:

Helped by	Urban	Semi-urban	Developed rural	Marginal rural	Indigenous rural
Nobody	31.9	38.7	45.3	54.3	52.6
Mother	44.2	16.9	17.9	8.6	11.2
Father	6.7	12.5	10.2	19.0	10.1
Siblings	11.6	26.2	20.5	14.6	17.0
Others	5.6	5.7	6.1	3.5	9.1

Source: Carron and Châu, 1996. Reproduced in MLA, 2002.

B. India (selected districts)

Helped by	Urban	Semi-urban	Developed rural	Marginal rural	Tribal rural
Nobody	37	43	55	66	63
Family	49	35	39	30	32
Others	2	1	6	4	3

Source: Govinda and Varghese, 1993, reproduced in MLA, 2002.

Children who are undernourished or otherwise in poor health have difficulty concentrating and attending class regularly. The World Food Programme describes this situation in these terms:

When poor children do go to school, they often leave home on an empty stomach. Three hundred million of the world's children are

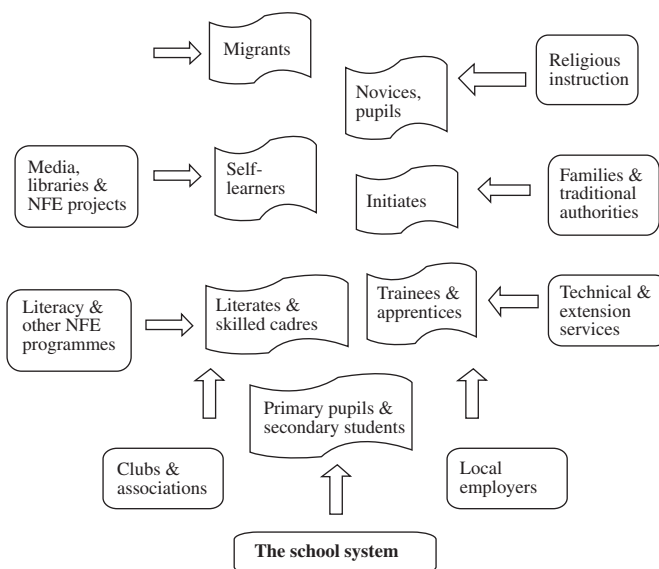
chronically hungry: the approximately 170 million of these children who attend school must learn while fighting hunger (World Food Programme, 2001).

A study on school health and nutrition commissioned for the World Education Forum noted: “As numerous studies show, education and health are inseparable: nutritional deficiencies, helminth infections and malaria affect school participation and learning.” It went on to say: “Health and nutrition status affect enrolment, retention and absenteeism” (UNESCO, 2000c). This is certainly the case in many rural schools.

1.2 Other modes of basic education in rural areas

Formal schooling is not the only vehicle of basic education found in rural areas. Some organized pre-school activities for young children contribute to their basic education and school readiness, and a variety of non-formal education and training activities provide basic learning opportunities for out-of-school children, adolescents and adults. In addition, various institutions and services (e.g. health clinics, libraries, agricultural extension) and media (e.g. radio, newspapers, folk theatre) provide rural people with useful information and support informal learning by children and adults. Also, one should not overlook the organized learning offered through non-formal religious instruction (Koranic schools, temple schools, etc.), informal apprenticeships and traditional practices, often of a religious nature, such as story telling, initiation rites and periods of residency with monks. Finally, there are various forms of indigenous, traditional learning provided by families and by communal groups. All of these forms of learning often play an important role in rural communities and help shape people’s understanding of their social and natural environment. These several sources of competencies found in rural communities are illustrated in *Figure 1* below.

Figure 1. Sources of competencies in rural communities



Source: Inspired by Easton et al., 1998 (Schema 6).

1.2.1 Early childhood development (ECD) programmes

Early childhood development (ECD) programmes are generally more available in urban than rural areas. A number of developing countries reported a modest overall expansion of ECD enrolments during the 1990s, while others reported a decrease. Unfortunately, there are few data showing the urban/rural distribution. However, data from Bolivia and Cameroon may be indicative. Bolivia reported ECD gross enrolment ratios approaching 60 per cent for its urban areas, but less than 10 per cent for rural areas, through the 1990s. Cameroon reported an overall decrease in ECD gross enrolment ratios for most of its 11 provinces between 1990 and 1997; in the latter year the ratios ranged from 30 per cent and 20 per cent for the two provinces containing its largest cities to less than one per cent in a very rural province, (UNESCO, 2000a).

Table 5 presents another view of the impact of ECD: the percentage of new entrants to grade 1 of the primary school who had attended some form of ECD programme. The data reported by these 32 countries suggests

that there was an increase during the 1990s in the overall percentage of pupils who entered school, presumably better prepared to learn. Presumably, too, most of these pupils entered urban rather than rural schools.

Table 5. Percentage of new entrants to grade 1 who attended some form of early childhood development programme

Countries with low levels in 1990	1990	1998	1998-90
Saudi Arabia	11	21	10
Azerbaijan	23	20	-3
Bahrain	20	43	23
Benin	6	6	0
Bosnia and Herzegovina	8	4	-4
Djibouti	4	3	-1
Jordan	25	38	13
Kyrgyzstan	3	5	2
Libyan Arab Jamahiriya	3	4	1
Paraguay	21	43	22
Sao Tome and Principe	20	22	2
Syrian Arab Republic	7	7	0
Tajikistan	15	8	-7
Togo	4	2	-2
Yemen	3	4	1
Countries with higher levels in 1990			
Antigua and Barbuda	84	92	8
Bahamas	100	100	0
Barbados	73	89	16
Belarus	94	100	6
Bolivia	32	58	26
Costa Rica	57	74	17
United Arab Emirates	63	72	9
Ecuador	34	44	10
Kazakhstan	94	20	-74
Morocco	64	70	6
Mexico	73	91	18
Niue	100	100	0
Qatar	50	45	-5
Republic of Korea	56	76	20
Seychelles	100	100	0
Thailand	71	94	23
Vietnam	55	70	15

Source: UNESCO, 2000a (Table 2.3).

ECD programmes can also have a less obvious effect on schooling, for which there are no available data. Young girls are often kept at home to look after their younger siblings, especially in rural areas. By taking on this task, ECD programmes ‘free’ the girls to attend school.

1.2.2 Non-formal basic education activities

Non-formal basic education activities in rural areas target various groups of illiterate and semi-literate adults, as well as children and adolescents unenrolled in school. *Table 6* shows that the adult illiteracy rates in all of the less developed regions declined during the 1990s, although the estimated absolute numbers of illiterate adults actually increased in sub-Saharan Africa, the Arab States and South Asia due to overall rapid population growth. It also shows that half or more adult women are illiterate in those same three regions. The second part of the table shows the estimated numbers³ of children of primary school age who are not enrolled in school – and who presumably will soon replenish the pool of illiterate adults. These figures give a general idea of the enormous need for basic education programmes designed for rural children and adults.

Table 6. Adult illiteracy and unenrolled primary school-age children in the less developed regions

	1990		1990		1997		1997	
Illiterate population aged 15-64	Total illiteracy		Female illiteracy		Total illiteracy		Female illiteracy	
	(millions)	(%)	(millions)	(%)	(millions)	(%)	(millions)	(%)
Less developed regions	875.8	33.4	553.4	42.8	867.9	28.5	552.4	36.6
Sub-Saharan Africa	134.9	49.7	81.7	59.1	137.6	41.8	83.6	49.9
Arab States	63.4	48.8	40.0	63.3	66.2	41.5	42.2	54.1
Latin America and Caribbean	42.7	15.2	23.9	13.6	41.6	12.5	23.0	13.6
East Asia and Oceania	240.3	20.5	167.1	29.0	206.7	15.7	147.4	22.7
South Asia	383.5	52.4	232.3	65.5	406.0	46.8	248.7	59.0

3. The UNESCO estimates are based on the official primary school-age population specific to each country in the five less developed regions.

Table 6. (continued)

Primary school-age children unenrolled	1990 (millions)	1998 (millions)
Less developed regions	119	109
Sub-Saharan Africa	39	42
Arab States	9	10
Latin America and Caribbean	11	5
East Asia and Oceania	7	6
South Asia	53	46

Source: UIS web site; UNESCO, 2000a.

The majority of these children and illiterate adults live in rural areas where, unsurprisingly, the incidence of illiteracy is higher than in urban areas, as illustrated by the data shown below in *Table 7* (some rare data showing the urban/rural distribution of illiteracy by gender). The large gap in illiteracy rates between urban and rural areas applies both to men and to women, while women in rural but also in urban areas are clearly disadvantaged by comparison with men.

Table 7. Urban and rural adult illiteracy in selected developing countries (percentage of population 15 years and older)

		Male		Female	
	Year	Urban	Rural	Urban	Rural
East and South Asia					
Bangladesh	1991	27.3	57.9	47.5	80.0
China	1990	6.1	15.7	18.4	37.1
India (a)	1991	18.9	42.1	35.9	69.4
Nepal (b)	1995	22.7	49.9	49.5	77.6
Philippines	1990	2.4	9.6	3.0	11.0
Thailand	1990	1.9	5.0	4.5	9.9
Latin America and Caribbean					
Bolivia	1992	3.7	23.0	13.5	49.4
Guatemala	1994	11.2	38.5	21.6	56.9
North Africa					
Morocco	1994	27.7	65.5	53.8	92.3
Tunisia	1989	21.9	44.9	42.4	75.1

Notes: (a) Illiterates aged 7 and over; (b) Illiterates aged 6 and over.

Source: IFAD, 2001 (Table 2.6).

Most non-formal education activities in rural areas probably include a component to develop literacy and numeracy skills. This may be the primary focus, or an instrumental element contributing to other objectives, such as improved health, income generation or food security. The variety of non-formal programmes is as vast as the range of their sponsors. (Several examples of non-formal basic education programmes will be examined in the next section.) Most are small-scale activities organized by community associations or other non-governmental organizations and some are organized by provincial or local authorities. Relatively few non-formal education programmes are organized by central governments, probably reflecting the priority they give to running the formal education system, which already draws heavily on their resources and management capacity.

There are a few encouraging examples of non-formal programmes that have expanded to reach large numbers of rural communities. One of the best known examples is the non-governmental Bangladesh Rural Advancement Committee (BRAC), which began providing rural non-formal schooling in 1985. By 1998 it operated some thirty-four thousand schools serving more than 1.2 million children (see *Box 3*). Some other programmes, like the rural radio stations in southern Mali, make use of radio or other media in the vernacular current in rural areas to inform various rural target groups and promote their basic learning in respect to health, agricultural practices, child care, environmental issues, etc. Of course it is impossible to have a clear picture of the numbers of persons actually reached, nor of the impact on their knowledge and behaviour, but anecdotal evidence suggests that such programmes can be quite effective and are appreciated by rural people (Emiliani and Gasperini, 2002).

Box 3. Bangladesh Rural Advancement Committee (BRAC) – Non-Formal Primary Education (NFPE) schools – Bangladesh

- (i) What did this approach aim to do? What were some of the key background features?
 - Initially, the aim was to develop a primary education model that could provide, in a three-year period, basic literacy and numeracy to the poorest rural children (eight to ten year olds) unreached by the formal system, i.e. those who have never attended primary school. Girls were given special emphasis. It originally started in 22 villages in 1985.

- The programme then expanded in 1991 to 6,003 schools, to also serve 11- to 16-year olds who had dropped out of schools and were unlikely to return. By 1996, expansion included 34,175 schools.
- Because poverty is identified by Bangladeshi parents as a major reason for their children dropping out or not enrolling in the formal schools, the NFPE programme is designed so that parents incur practically no direct costs for sending their children to BRAC schools.

(ii) What was the approach?

The school programme

Students: A school consists of 30 children, living within about a two-kilometre radius of the school.

Teachers: Teachers are generally married adults, 60-70 per cent of whom are women, have completed nine or more years of education and live within easy walking distance of the school. These teachers are hired on a temporary part-time basis and are paid modest wages. Weekly visits from BRAC field workers provide regular feedback.

Schedule: The NFPE instructional programme is presented in three-year cycles. The school is in session for 2.5 to 3 hours per day, 6 days a week, 268 days per year at a time of day selected by the parents. The group of 30 students remain in their cohort for the three-year cycle. At the end of the three-year cycle, the school begins another three-year cycle if there are enough eligible children in the community.

Instructional Site: Instruction is provided in one-room houses and storerooms rented for just 3 hours per day.

Instructional Approach: Although the pedagogical approach in BRAC schools is intended to be more student centered and the curriculum approach activity based, more traditional methods tend to dominate.

Curriculum: The curriculum for NFPE schools, consisting of Bangla, social science and mathematics, has been developed and revised several times by BRAC. The material covered is roughly equivalent to Class I-III in the formal school system. Since the formal school system requires English, the NFPE schools include English in their curriculum during the third year so that children who want to matriculate to formal schools after three years are well prepared.

Costs: Independent cost studies confirmed that BRAC costs for schooling are roughly equal to that of the government's formal schooling. Unlike the formal school system, which allocates the vast majority of its resources to teachers' salaries and school facilities, BRAC allocates almost 30 per cent of the NFPE programme budget to management and supervision. Only 29 per cent is allocated to teacher salaries, 6 per cent is used to rent school space and the rest for materials, etc.

- (iii) How successful was the approach? How was this success determined?

More than 90 per cent of the children who start BRAC schools graduate and a large proportion of the NFPE programme graduates are admitted into Class IV or higher of the Government school system. Even with annual costs per enrolled student in BRAC and the formal school system approximately equal, the relatively higher attendance rates, lower repetition rates, higher Class III completion rates and higher Class IV continuation rates for BRAC students mean that BRAC schools are substantially more cost efficient per graduate than the government's formal schools.

- (iv) On the evidence available, how sustainable to go to scale is this approach?

The success of BRAC schools is largely due to their flexibility and this makes it difficult to extend to the larger population. Also, some specific contextual characteristics in Bangladesh that shaped the BRAC design include high rural population density and high levels of rural, educated people who are under- or unemployed. This combination is not so commonly found in other developing countries.

Sources: Ahmed et al., 1993; Sweetser, 1999.

It is clear, however, that non-formal programmes of all sizes have made and continue to make a significant contribution to meeting basic learning needs of rural people. The 'non-formality' or flexibility of such programmes enables them to reach groups or to meet learning needs that are overlooked by government departments and services. Public authorities and external donors often acknowledge the impact of such programmes in specific communities and districts. While there is certainly room and a need for expansion of good, non-formal basic education programmes, they are unlikely to reach the scale required to meet the vast unmet basic learning needs of large numbers of rural children and adults.

Although insufficient funding is the principal limitation on the expansion of non-formal programmes, their very nature makes it difficult to scale them up without 'formalizing' them and compromising certain of their advantages, such as flexibility, adaptability and constructive interaction with the learners and the local community. However, public authorities could certainly encourage and support such initiatives to a far greater extent and examine their experiences for innovations that might be applied in schooling and extension programmes run by public institutions.

1.3 Learning achievement and outcomes

The quality and effectiveness of schooling and other forms of basic education should translate into learning achievement and positive changes in behaviour. With respect to primary schooling, the UNESCO-UNICEF Monitoring Learning Achievement project has generated survey findings in a large number of low-income countries. These surveys indicate that pupils in urban schools generally develop better literacy, numeracy and 'life skills' than do pupils in rural schools.⁴ *Table 8* shows urban/rural disparities in the mean scores from tests administered to samples of pupils, usually in grades 3 or 4 or 5. In nearly all cases, the mean score for urban pupils exceeded that for rural pupils. For reasons unexplained, in three cases (Central African Republic, Comoros and Congo) the mean literacy score of rural pupils slightly exceeded that of urban pupils and the mean score for life skills was slightly higher in the rural areas of four countries (Niger, Uganda, Lebanon, and Sudan). Only in Cuba did rural pupils achieve a higher mean score in numeracy (see *Box 14* that describes Cuba's special strategy to improve rural schools). However, these were the few exceptions to the general pattern of urban advantage in learning achievement.

Table 8. Urban/rural disparities in learning achievement

	Literacy a)	Numeracy b)	Life Skills c)	Note
Sub-Saharan Africa				
Botswana	4.0	2.0		1
Burkina Faso	15.3	32.4		7
Cameroon	4.3	32.5		7
Central African Republic	- 1.7	24.9		7
Comoros	- 3.0	0.1		4
Congo	- 5.0	29.8		7
Côte d'Ivoire	1.3	26.7		7
Djibouti	4.2	10.4		7
Madagascar	13.0	11.0	4.0	1
Malawi	2.0	2.0	2.0	1
Mali	7.0	2.0	10.7	1
Mauritius	2.8	4.7	4.5	1
Niger	4.5	1.7	- 0.2	1
Sao Tome and Principe	12.7	8.0	3.0	4
Senegal	1.7	4.7	0.2	1
Uganda	7.1	3.7	- 0.6	1
Zambia	6.4	5.0	7.8	1

4. Life skills refer to knowledge and abilities, based on simple science or concerning health or civic affairs that are useful in everyday life. Their content in the surveys varies from country to country.

Table 8. (continued)

Arab States				
Jordan	7.4	4.6	6.5	2
Lebanon	3.7	1.2	- 0.3	2
Morocco	6.0	7.3	4.0	1
Oman	3.8	1.8	1.4	2
Palestinian Autonomous Terr.	4.1	3.9		2
Sudan	8.1	3.2	- 1.8	2
Tunisia	6.2	9.0	7.0	1
Asia and Pacific				
Bangladesh	21.8	11.8	0.9	3
China	2.4	2.9	0.5	4
Kazakhstan	23.0	33.3	5.9	4
Korea, Republic of	0.7	3.3	0.7	6.8
Maldives	17.3	34.8		4.6
Mongolia	9.6	15.7	12.0	4.5
Philippines	6.8	3.4	9.3	4
Uzbekistan	3.4	2.2	1.2	4
Latin America and Caribbean				
Argentina	14.7	21.8		8
Bolivia	25.4	13.0		8
Brazil	13.2	21.3		8
Chile	10.8	20.4		8
Colombia	6.7	- 5.1		8
Cuba	1.7	5.3		8
Dominican Republic	14.2	2.3		8.9
Honduras	25.0	16.9		8
Mexico	17.3	18.2		8
Paraguay	18.8	16.8		8
Peru	33.3	26.6		8
Venezuela	4.8	5.0		8

Source: MLA, 2002.

- a) Literacy Disparity = mean literacy score in urban areas minus mean literacy score in rural areas.
- b) Numeracy Disparity = mean numeracy score in urban areas minus mean numeracy score in rural areas.
- c) Life Skills Disparity = mean life skills/science score in urban areas minus mean life skills/science score in rural areas.
- 1) Grade 4. *With Africa, for Africa toward Quality Education for All*, V. Chinapah, MLA Project, 1999.
- 2) Grade 4. *Regional synthesis report on Monitoring Learning Achievement activities in the Arab States*, MLA Project, 2000.
- 3) 11-12-year-olds. Literacy = reading. *ABC Survey Bangladesh*, 1993.
- 4) Grades 4-5. *Monitoring Learning Achievement Country Reports*, MLA Project, 1993-2000.
- 5) 80-100 per cent mastery learning level.
- 6) 40 per cent mastery learning level.
- 7) Grade 3. *Programme d'analyse des systèmes éducatifs*, PASEC, 1993-2000.
- 8) Combined score: 50 per cent language, 50 per cent maths, Cassasus, et al., 2000.
- 9) Life skills = social studies.

Sample surveys undertaken by the Southern Africa Consortium for Monitoring Educational Quality (SACMEQ) found similar results in respect to three domains of reading literacy (narrative prose, expository prose, and processing facts in a document). *Table 9* shows the distinct advantage of pupils in schools located in cities over those in rural and isolated areas and even small towns in reaching at least the *minimum* level of reading literacy. In respect to the *desirable* level of achievement, the urban advantage was also very clear.

Table 9. Percentages of pupils reaching desirable and minimum mastery levels in three domains of reading literacy – minimum levels distributed by location of schools

	Kenya		Malawi		Mauritius		Namibia		Zambia		Zanzibar		Zimbabwe	
	%	SE ^b	%	SE ^b	%	SE ^b	%	SE ^b	%	SE ^b	%	SE ^b	%	SE ^b
Desirable level	23.4	2.10	0.6	0.30	26.7	1.71	7.6	1.48	2.4	0.48	5.2	0.46	37.0	1.59
Minimum level of which:	64.8	2.35	21.6	1.60	52.8	1.88	25.9	1.77	25.8	1.71	46.1	1.04	56.4	1.53
Isolated	51.2	15.00	11.2	6.64	29.8	9.41	17.7	8.57	32.5	5.23	44.1	5.88		
Rural	59.6	3.13	19.7	1.59	48.5	2.74	12.1	1.63	24.0	2.14	40.2	1.49	50.1	1.91
Small town	71.6	4.91	19.9	3.75	54.7	5.93	31.3	5.17	23.9	4.81	48.6	1.92	73.7	4.61
City	86.2	2.38	43.8	8.65	59.5	2.95	70.8	4.21	31.2	3.67	60.6	2.45	74.2	3.08

^aN.B. The tests and the desirable and minimum mastery levels were determined by each country for itself.

^bSE indicates the 'sample error'. Adding and subtracting the SE figure to the sample mean per cent gives the upper and lower limits within 95 per cent accuracy if applied to the total population concerned. The lower the SE, the narrower the margin of accuracy.

^cZambia's data for Isolated and Rural communities are combined.

Source: Ross, 1998-2001.

A detailed analysis of literacy and numeracy achievement in 13 Latin American countries also found a consistent advantage in the mean score of pupils in large metropolitan areas over their peers in rural areas and even in smaller urban areas. This disparity was less evident at the simplest level of skill mastery, such as recognition of words, but became more pronounced as the skill level rose, e.g. comprehension of a short text (Casassus et al. 2000).

Assessments of learning achievement of rural participants in adult basic education programmes have usually found some gains in general knowledge and specific skills, including but not limited to literacy skills. However, other outcomes of these programmes are probably at least as important. For example, a recent World Bank report based on a review of various studies found that adult basic education increases participants' efficacy for individual or collective action. The acquisition of literacy and numeracy skills can increase adults' self-confidence in their dealings in the market place – which in turn may improve their income. This 'empowerment' effect is particularly significant for women in male-dominated societies. Literacy also facilitates learning other skills, such as management skills. The report found that basic education programmes for adults show definite positive effects on family health and family planning. Furthermore, such programmes have a synergy effect on children's schooling. Neo-literate mothers, in particular, seek to put and keep their daughters in school (Lauglo, 2001). Besides such beneficial outcomes for the learners and their families, certain benefits for the community are sometimes attributed to adult education programmes, such as improved social cohesion and reduction in violence (see *Box 9*).

1.4 Basic education inside the poverty cycle

Although there are local exceptions to the pattern of basic education in the rural areas of low-income countries sketched above, opportunities for basic learning are generally inadequate to help rural dwellers to break out of the poverty cycle. This lack of basic learning opportunities is both a contributing cause and an effect of rural poverty. It is part of what the International Fund for Agricultural Development calls the 'interlocking logjam' of disadvantages.

Rural people are poorer partly because they are likelier to live in remote areas, to be unhealthy and illiterate, to have higher child/adult ratios and to work in insecure and low-productivity occupations. They may also experience discrimination as members of ethnic minorities (IFAD, 2001).

These several disadvantages tend to overlap (e.g. poor, illiterate, malnourished women belonging to an ethnic minority in a remote rural area) and cumulate so as to reduce their access to education and any possibilities of escaping from poverty or helping their children to escape.

Basic education by itself is unlikely to break this vicious circle, but it should be a key part of a rural poverty-reduction strategy.

1.5 Why has basic education in rural areas been neglected?

Given the oft-reiterated commitment of governments to reducing poverty, why is there not greater investment in basic education in rural areas? The main reason seems to be that developing country governments have other priorities that absorb their attention and resources. Public expenditure patterns reveal that most countries' real priorities favour urban development rather than rural development. This reflects an understandable concern to deal with the many problems associated with the relentless process of urbanization, but it is also a response to the growing political power of the urban population. "Where resources have to be divided between rural and urban spending on, for instance, health and education, outlay per head is normally less in reaching rural areas, even though rural people have lower initial health and literacy. So higher spending in rural areas should normally improve outcome more than higher spending in urban areas" (IFAD, 2001). Thus this urban bias in public expenditure is not only inequitable, it is not cost effective, nor does it contribute to a country's sound, overall development.

The poverty and political weakness of rural populations are cited as main causes of rural neglect in a recent report issued by UNESCO's International Research and Training Centre for Rural Education:

"... governance in developing countries bypass [sic] the politically voiceless – those who suffer multiple deprivations on account of their income, ethnicity, gender, religion and because they live in rural areas ... The poor in general and religious, ethnic and cultural minorities, in particular, bear disproportionately the burden of deprivation from essential public services including education [...]. The facts clearly are that the social sectors, especially the priority items of human development and education for the politically inarticulate and invisible rural poor, have been crowded out from government budgets by such items as heavy military expenditures, keeping afloat loss-making public enterprises in urban areas, subsidies that do not often reach the poor and external and internal debt-servicing" (INRULED, 2001).

Basic education thus suffers neglect for reasons that apply to all forms of social investment in rural areas, but there are also other reasons specific to its nature. As seen above, the vast, unmet basic learning needs in rural areas cannot be satisfied through schooling alone. Much effort and investment is needed to reach out-of-school children, adolescents and adults. Most developing countries make little provision in their education budget for such programmes, nor do they have the administrative capacity to manage them. Although the 1990 World Conference on Education for All stressed the importance of providing basic education for all children, *youth and adults*, governments (and donors) have tended to focus exclusively on universalizing primary education – an ambitious goal in itself. Consequently, the provision of basic education for youth and adults, as well as out-of-school children, has been left largely to NGO and private initiatives.

Even when government recognizes the imperative need to invest more in rural areas, it must sort through many competing demands and fix reasonable priorities. For some countries, prior disappointing experiences with agricultural education and with adult literacy campaigns raise legitimate questions about how best to proceed. For instance, how can primary school curricula be made relevant to local needs and conditions? What kind of adult basic education programmes will be most effective? Attempting to deal with these issues through a centralized education bureaucracy is fraught with problems and few governments have so far found a formula that allows sufficient flexibility and accountability. Meanwhile, indecision and hesitant initiatives prevent any serious increase in resources allocated to basic education in rural areas.

Finally, the very enormity of the needs in rural areas may have sometimes discouraged investment. According to one analysis, the generally dismal picture of education in rural areas tends to reinforce a ‘deficit view’ that lowers expectations, overlooks options, and reduces enthusiasm among those who could initiate and carry out improvements (World Bank, 2000a: 5). The question for them becomes: Why invest scarce resources in a less promising, if not hopeless, part of the education system? However, the next section examines a number of positive experiences that suggest that this ‘deficit view’ is unduly pessimistic.

2. Improving the provision of basic education in rural areas

Despite the shortcomings in the provision of basic education in rural areas today and the chronic shortfall in resources allocated for it, progress is being made as many countries continue their efforts to expand its coverage and improve its quality. This section will look at some of these efforts and attempt to analyze their potential contribution to achieving Education for All and rural development goals.

To reach these goals, a determined and long-term commitment is required to expand learning opportunities for various categories of learners across different age groups with a broad range of basic learning needs. In order to maximize the returns on this investment, basic education must be offered on an equitable basis so that all learners have a fair opportunity to obtain a viable basic education and be able to continue learning throughout their lifetime. Some combination of formal and non-formal programmes is needed, as well as various informal educational opportunities (e.g. rural newspapers, libraries, women's associations) for lifelong learning.

To attract and retain learners and to meet their needs effectively, a simultaneous commitment to improve the quality and relevance of basic education programmes is called for. In many instances, this will entail designing and running the programmes in close harmony with other development activities (health, food security, agricultural production, etc.) organized in the rural areas concerned to ensure that learners can put their knowledge and skills to good use.⁵

Furthermore, efforts to expand and improve basic education in rural areas need to be undertaken in the broader context of each country's education and training system. Systemic reforms should aim both to remove the existing urban/rural disparities in educational opportunity and to ensure a coherent system with appropriate bridges between its various streams and a fair recognition of learning levels achieved in diverse ways.

2.1 Expanding the provision of basic education with greater equity

As seen earlier, a large proportion of the world's rural population has little or no access to basic education offered by the state or by other

5. Section 3.2 below discusses the need for co-operation among the various actors concerned.

education providers. According to UNESCO, there are well over 100 million primary school-age children unenrolled in the schools of the less developed countries (UNESCO, 2000a), and most of them are from poor families in rural areas. Unfortunately, many of the children who do enrol in school drop out without obtaining a viable basic education, and even those children who do complete the primary cycle need further learning opportunities, which are even more scarce than schooling in rural areas. Only a small fraction of rural adolescents and adults have access to any organized basic education programme.

2.1.1 Constructing more primary schools and classrooms in rural areas

Constructing more primary schools and classrooms in rural areas is an obvious priority for many countries. A parallel strategy to increase school capacity is to seek ways to use existing facilities and teachers more efficiently to accommodate more pupils. Where feasible, for instance, multigrade classrooms and teaching pupils in shifts (e.g. one set of pupils in the morning, another set in the afternoon) can effectively expand the school system's capacity.

While the physical expansion of the primary school system will certainly enable more children to have access to schooling, meeting the basic learning needs of the marginalized and neglected groups and categories of learners will require additional, special efforts. Among the children unenrolled in school, girls still constitute the majority, despite the priority given to girls' education in numerous international and national policy instruments. Other groups and categories whose basic learning needs generally are not met include very young (pre-school) children, working children (more visible in urban areas but present in rural areas, too), illiterate adults, remote and nomadic populations, refugees and people with disabilities who have special learning needs. Providing suitable learning opportunities for these children, adolescents and adults in rural areas is certainly a challenge, especially for the low income countries, but it must be met in order truly to achieve Education for All. Various initiatives over the past few decades have shown promising ways to reach certain of these target groups with basic education services.

2.1.2 Making primary education compulsory is an important prerequisite for achieving EFA.

Making primary education compulsory is an important prerequisite for achieving EFA. Legislation governing education in some countries needs to be reviewed and revised to make compulsory education attainable and enforceable in rural areas. Any remaining legal impediments to girls' education, for instance, must be removed. As noted earlier (see *Section 1.1.1*) certain administrative requirements and practices, such as possession of an official birth certificate in order to enrol in school, also constitute obstacles for many rural families. Appropriate legal and administrative measures can eliminate such obstacles. Likewise, laws and customs concerning the legal age for first marriage and governing child labour may also need to be revised to remove another set of obstacles to girls' and boys' participation in schooling.⁶

2.1.3 Increasing the school enrolment of girls

Increasing the school enrolment of girls is a priority aim for many governments. Of course any increase in the number of schools and classrooms should enable more girls, as well as boys, to enrol in school. However, experience has shown that increasing the *proportion* of girls enrolled, as well as their numbers – thereby moving toward better male/female equity in schooling – often requires special measures to induce parents to enrol their daughters and keep them in school. Some relatively simple changes can often make a big difference. For example, enclosing the schoolyard with a fence and building a separate latrine for girls can help allay parental concerns for their daughters' safety. Another simple measure is adjusting the school calendar to accommodate other demands on girls' time, such as fetching water early in the morning or selling goods on the weekly market day.

However, more ambitious measures are often needed. Teaching is still a male-dominated profession in many low-income countries and in some societies, rural families are reluctant to entrust their daughters to a male teacher. Several countries have succeeded in boosting the enrolment and retention of rural girls in school by recruiting more women teachers for rural assignments. This measure is not without complications, however, as young, unmarried women are often reluctant to go to rural areas,

6. See *Section 2.1.6* for further discussion of providing basic education to working children.

especially if they are not of the same ethnic or language group. Recruiting young women to serve as teachers in their own village or area is sometimes a viable solution and offers positive role models with which the local girls can more easily identify.

Some adjustments to the curriculum can also help attract and retain girls in school. Eliminating negative gender stereotypes is an obvious first step, but which is not so easy to do quickly. Textbooks and other learning materials must be revised and replaced, eventually. Seemingly neutral content may also need to be revised or supplemented with material more interesting to girls. As seen in *Box 1*, lack of interest in school studies can dissuade girls (and boys) from enrolling or continuing in school. In addition to appropriate changes in the curriculum, any gender-biased behaviour of teachers, especially but not only male teachers, should be corrected through training and supervision. Girl pupils ignored or ridiculed during math lessons, for example, are candidates for drop-out.

Overcoming cultural resistance to girls' education and compensating families for the opportunity costs they incur when girls attend school generally require even more demanding solutions. Information campaigns to sensitize parents to the benefits of girls' education may achieve some positive results, but are more effective if they are accompanied by some incentive scheme such as offering cash 'scholarships' to families who enrol their daughters in school. Scholarships and other financial incentives such as the waiving of school fees and providing free textbooks for girls can encourage poor families to allow at least one daughter to attend school – an important first step in opening a rural school to girls. When such incentive schemes are planned and conducted in consultation with local families, the positive effects on girls' participation in schooling are more likely to carry on even when the financial incentives finally end.

2.1.4 School-feeding programmes

School-feeding programmes, which provide a midday meal and/or mid-morning snack for pupils, boys and girls, can be an effective incentive for enrolment and attendance in school. In the initial negotiations with the local community, an increase in girls' participation in schooling can be made a condition for the introduction of such a programme. The provision of nutritious food to children at school may produce health benefits as well, particularly in rural areas with low food security. There is some

evidence that it also helps improve children's concentration in class and thereby presumably improves their learning achievement (UNESCO and World Food Programme, undated).

The World Food Programme (WFP), which has supported school-feeding programmes in numerous countries for several decades, finds take-home food rations effectively promote girls' education. *Box 4* describes how such a programme has worked in Niger. This kind of incentive is tied directly to girls' participation in schooling and benefits her immediate family. It may be combined with traditional school-feeding programmes, which benefit both boy and girl pupils.

Box 4. Take-home food rations get more girls in school – Niger

Niger is one of the five countries in the world where children have the lowest chances of receiving an education. In 1998, only 27 per cent of primary school age children attended school, and only 30 per cent of 7-year-old girls managed to start primary school as compared to 42 per cent of boys. Rural girls were hit the hardest, with only 15 per cent attending primary school that year.

As in many other countries, women carry most of the burden of agricultural and household work. Girls help their mothers with daily chores in the fields and at home, fetching water and firewood and looking after younger siblings. Many girls also work to supplement the family budget. Consequently, most families simply cannot afford to let their daughters go to school. Socio-cultural traditions are another obstacle to girls' education. In some rural communities education is still considered to offer little practical value for a girl. Schooling is sometimes thought to make girls less suitable for marriage or affect their behaviour in ways that are incompatible with religious and family values.

The World Food Programme developed an innovative way of using food aid to overcome inequalities in school attendance by encouraging families to send their daughters to school. Basic food items, like a sack of rice or several litres of vegetable oil, are distributed to families in exchange for their daughter's regular attendance in school. These take-home rations compensate parents for the loss of their daughters' labour and encourage parents to allow their daughters to attend class. The more girls a family sends to school, the larger the ration. The ration is distributed during the

agricultural lean season when household food stocks are particularly low and food is needed to tide families over until the following harvest.

Distribution of take-home rations has produced spectacular effects on girls' enrolment in Niger. One survey showed that girls' enrolment increased by 75 per cent after the distributions started. Initially, the project's success created some concern over possible structural problems in the education system because many schools lack classrooms or teachers to properly accommodate new pupils and some even have to limit new enrolments. However, a recently released report by the World Food Programme confirms that food for education initiatives often improve the overall educational environment and increase government involvement.

The report shows new classrooms are being built as school facilities expand to accommodate more students and reveals that the rate of recruitment for certified female teachers is increasing at a faster rate than their male counterparts. The rise of certified female teachers in the classroom also encourages girls enrolment and helps balance often predominantly male classrooms.

Source: World Food Programme, undated.

Due to dramatic increases in enrolment at the onset of many food aid programmes, student enrolment levels should be monitored as the educational quality and supporting infrastructures may take longer to establish. Recent studies, however, show that school-feeding programmes actually increase government involvement and may help create increased attention and funding to these key issues. *Box 5* summarizes a number of lessons learned from WFP's experience with take-home rations.

Box 5. Take-home rations for girls' education: lessons learned

TAKE-HOME RATIONS HELP GIRLS' EDUCATION! Where the World Food Programme has introduced a programme of take-home rations for girls, the enrolment of girls increased significantly, often dramatically. At WFP-assisted schools in the Northwest Frontier Province in Pakistan, the enrolment of girls increased by 247 per cent between 1994 and 1998. Similarly, a mid-term evaluation of a programme in Cameroon showed girls' enrolment rose by 85 per cent. Preliminary information indicates these gains

are long lasting and such assistance helps to keep a larger number of girls in school once they have enrolled.

- In places where a strong tradition for sending girls to school does not exist, encouragement is needed to overcome social or cultural barriers to girls' education. Food aid can provide such an incentive, and while food is the initial incentive for sending girls to school, it soon becomes a catalyst for engaging parental interest and participation in their daughter's education.
- This change in parental attitudes with regard to girls' education is an important factor that enhances its continuity beyond the duration of food assistance. Whenever possible, the World Food Programme take-home ration schemes include activities to create awareness and increase the interest of parents in the education of their daughters.
- Take-home rations work best for people to whom food is a particularly valuable resource - the poorest, most food-insecure households. World Food Programme assistance to these families directly tackles the critical issue of opportunity costs that prevent girls from receiving an education.
- Take-home rations have been successful in promoting girls' education even when they are not fully equivalent to the value of a girl's labour at home or the income a girl might earn working away from home.
- Food aid increases the value of a girl's education to her parents, as well as the girl's status within the family, since her attendance yields a direct, valuable and tangible benefit.
- Take-home rations should be provided for at least a full primary education cycle to enable a generation of girls to acquire basic knowledge and skills. In this way, the benefits of food aid for girls' education will even extend to future generations, since research has shown educated girls are more likely to send their own daughters to school.
- Whenever possible, take-home rations should be accompanied by complementary interventions such as school construction, improvements in school infrastructure, female teacher training or elimination of gender stereotypes in curricula and teaching materials.
- The commitment, support and active involvement of parents in take-home ration programmes are key elements for programme success. From the outset, parents should be made partners in planning and programme implementation. The sensitization of mothers is particularly important to ensure optimal distribution and use of food in the home.

Source: World Food Programme, 2001a, 2001b.

These early childhood years are when experiences and interactions with parents, family members and other adults influence the way a child's brain develops, with as much impact as such factors as adequate nutrition, good health and clean water. And how the child develops during this period sets the stage for later success in school and the character of adolescence and adulthood (Bellamy, 2001).

Poor families with little or no education are ill equipped to provide the kinds of stimulation young children need to develop their latent capacities. ECD programmes can help parents become better 'educators' and can directly provide educational activities and child-care services while the parents work. ECD pre-school programmes for children in the 4 to 6 age group are generally credited with preparing children for structured, group learning in school.

Unfortunately, ECD programmes are available to very few rural families. *Box 6* describes the situation of young rural children in Malawi – a situation probably typical of many sub-Saharan African countries. It also shows what can be done even in a resource-poor country when the government recognizes the utility of ECD.

Box 6. Childcare practices – Malawi

In Malawi, where about 15 per cent of children are orphaned by HIV/ AIDS, disease and unrelenting poverty continue to erode the capacity of families and communities to care for their youngest members. More than 90 per cent of the children in rural areas, where 85 per cent of the country's population lives, have no access to any form of organized early childhood care – care that can enhance their right to survival, growth and development.

In 1999, the Government of Malawi and UNICEF stepped up their efforts on behalf of children from 0-3 years old, developing policies, guidelines and training modules at the central level. Extension workers were trained and local plans of action were developed at the district level. As a result, there is an increased demand for early childcare services – a first sign of success. While the number of community-based childcare centres is still quite small, demand is rapidly increasing and the benefits of focusing on the needs and rights of young children and their families are becoming more visible.

Local projects use a home visitor model and depend on volunteer community members to serve as caregivers and committee members. The projects focus on six childcare practices: care for women, breastfeeding and complementary feeding, food preparation, psychosocial care, hygiene practices and home health practices. Despite abject poverty throughout much of the country, many community members contribute food supplies and work in communal gardens or other income-generating activities to raise money for the centres.

Source: Bellamy, 2001.

Providing care and education for young orphans is becoming a major task for African governments. Armed conflicts in poor countries have generated millions of orphans, as well as injured, disabled and homeless children. Natural disasters and devastating diseases have added to this pool of especially vulnerable children. In Namibia, for instance, the number of children orphaned by AIDS increased five-fold between 1994 and 1999. The Government and UNICEF provide material assistance to day-care centres that offer free services to orphans (UNICEF). This kind of intervention is necessary on humanitarian grounds, but is also an important investment in providing basic education services in the crucial early years.

The providers of ECD programmes in rural areas are often NGOs or community organizations, whereas state run pre-schools are generally found only in urban areas. *Box 7* shows how one NGO is providing ECD training to rural parents in Sri Lanka, a low-income country with exceptionally good social services. In Turkey, too, the average family cannot afford to send children to an ECD centre. Consequently, the Mothers' Training Programme, operating in 24 provinces, uses televised videos to reach more than 80,000 mothers – and other family members – to help them provide a stimulating learning environment in the home for their young children. Such family- and community-based ECD programmes are much less costly than centre-based programmes (UNICEF).

Box 7. ECD in a village – Sri Lanka

Priyanthi, her husband and children live in a small, four-room, cement house without electricity or running water. They sleep together on a dirt floor on woven straw mats. The family survives on a little over 2,000 rupees (about \$27) a month that Priyanthi's husband earns on a tea plantation in Sri Lanka.

Priyanthi's family is one of 22 families involved in a home-based programme carried out in their small village by a local NGO called Sithuwama, which means 'raising a child with enjoyment'. It promotes early childhood care, including healthy childcare practices and cognitive stimulation. Its services are provided through home-visiting programmes for infants up to age three and for pre-schoolers from age three to five.

Through this home-based service, Priyanthi learns that good nutrition, home hygiene and sanitation practices and cognitive stimulation are all necessary ingredients for her children to grow and develop. Now, she is investing the focused time, care and attention that are vital for improving her children's lives. She collects extra firewood to boil water for her children to drink. She finds legumes that add to the nutritional value of their meals. She makes certain that they use the latrine and wash their hands afterwards. She asks her children their thoughts about the birds chattering overhead during their baths in the stream. She takes them to village health days.

Sithuwama's volunteer home visitors helped Priyanthi figure out how to promote her children's psychosocial and cognitive development without spending much money. They taught her the importance of play for her children's physical and mental well-being. Priyanthi meets weekly with a programme volunteer and once a month with a group of other parents in support sessions. Learning from each other, the parents compare notes about their babies' height, weight and other milestones. They review the opportunities throughout the day to engage their children in teachable moments – waking up, mealtime, washing and bathing, cooking, visiting, working outdoors, playing and getting ready for bed.

Source: Bellamy, 2001.

2.1.5 Working children

Working children are another large, amorphous group that schools generally fail to serve. In rural areas, children can be seen tending flocks, working in the fields, running errands in the villages, doing household

chores, minding young children and working at various crafts. Some forms of child labour are clearly hazardous and harmful, such as the young banana pickers in Ecuador, some as young as eight, who are exposed to the spraying of toxic chemicals and to sexual harassment, according to a recent report by Human Rights Watch (*The Economist*, 27 April 2002). However, other tasks performed by children in rural areas are not detrimental in themselves, are useful to their families and may entail some basic learning that is well suited to local conditions and employment opportunities. Yet, children who remain illiterate, with little or no exposure to the range of subjects offered in the school, are poorly equipped to improve their livelihood and living conditions and to adapt to changes in the rural economy.

Most countries have legislation for a defined period of compulsory education (e.g. the first 5 or 6 grades of primary schooling, or from age 6 through 12), but enforcement, particularly in rural areas, is problematic. Poor families often depend on their children's labour and whatever additional income they can earn. Forcing their children to attend school – even if this could be done – would undermine the viability of many poor families. The more humane approach is to find ways to adapt the school to their needs or to provide alternative opportunities to acquire basic education. As mentioned earlier with respect to girls, some adjustment of school hours and the school calendar may also enable some working children to attend at least part-time. Similarly, school feeding and other incentive schemes can help compensate families for the labour or income foregone when their children attend school instead of working. A careful needs analysis undertaken in consultation with local families and local authorities can help identify which adjustments, if any, could attract and retain working children in school.

Such locally negotiated adjustments to schooling may not always be feasible or fully effective. Offering working children an alternative to conventional schooling requires more planning and effort, but can achieve good results. *Box 8* below describes one example of an alternative provision of basic education. Morocco's *second chance schools* target out of school children and adolescents, some of whom are working. This programme illustrates what can be achieved when government and NGOs work together to find solutions to the complex problem of unschooled children.

2.1.6 Illiterate adults

Illiterate adults and others who have weak literacy and numeracy skills constitute a very large target group for adult basic education (ABE). This is clearly an important dimension of Education for All and can also be a strategic factor in the transformation of rural areas.

There is some evidence of a revival of interest in ABE among donors. Earlier disappointment with the results of literacy campaigns and programmes seems to be giving way to a growing recognition of the several important benefits and outcomes of well designed ABE programmes. A recent report published by the World Bank notes that: “Earlier allegations about generally poor internal efficiency of ABE are contradicted by the bulk of evidence now available.” It goes on to say that minimum literacy can be achieved at less cost among motivated youth and adults than the cost of three or four years of primary schooling. Its review of ABE programmes found that at least half of the participants completed the course and met minimum performance criteria. The subsequent loss of literacy and numeracy skills “is not an internationally pervasive problem – though a literate environment helps ensure improvement rather than loss of skills” (Lauglo, 2001).

Box 8. Second chance schools – Morocco

Morocco’s recently established non-formal education programme offers out-of-school children a second chance for schooling or training for work – and offers a second chance also to those responsible to provide Education for All. It targets the 2.2 million children between 8 and 16 years old who have never entered school or have left before the end of the ‘compulsory’ cycle. Over three-quarters of these children live in rural areas and some 45 per cent are girls. Consequently, the programme gives special attention to reaching rural children and girls in particular. It also gives attention to meeting the basic learning needs of working children and children in difficulty (street children, delinquents).

Flexibility and adaptability have become guiding principles of the programme. The weekly schedules (varying from 4 to 24 hours over 6 days), as well as the vacation periods, are determined in each locality in accord with the availability of the learners and in agreement with the parents. Programme content is adapted to the learning needs of each group and the

particularities of each region. In addition to literacy and numeracy skills, learners acquire knowledge and skills relating to health, the environment, civics, religion and leisure activities.

The teachers and facilitators are recruited within each region. They are given training by trainers who themselves have been specially trained by inspectors and teacher educators in the formal education system. Classes take place in various facilities: rooms offered by local associations, government offices, unoccupied school classrooms, even private homes.

To mobilize the varied material and human resources needed for the programme, information and sensitization campaigns are carried out. The Ministry of Education has entered into a number of partnerships with various government departments, non-governmental organizations (NGOs) and local authorities and associations. Several international partners support the programme as well. NGOs are associated with the Ministry of Education through a convention that sets out a framework for co-operation and a work plan that defines the responsibilities of each party. The Ministry provides funding to pay the facilitators, trains them, supplies the educational materials and evaluates the overall programme. The NGOs engage young graduates as facilitators, enrol the pupils, make local arrangements for the classes, seek additional resources and generally manage the programme at local level.

In the four years through 2000, more than 87,000 children (57,000 girls) participated in the programme. Of the 48,000 'graduates', over 3,000 passed into the formal schooling system and some 45,000 were prepared for employment. Nearly 7,000 of them had apprenticeships in agriculture, crafts, services, industry and commerce. During the same period, 1,382 teachers/facilitators were trained (over half being women), 45 partnership agreements were signed with NGOs and another 211 NGOs were in line to participate.

Beginning in 2001, priority is given to the 8-12 age group, with a view to attaining universal primary education by 2003. The Ministry's own teachers contribute to providing education to this group. The non-formal education programme aims to increase its coverage to some 200,000 learners per year, so that it will have significantly reduced the 2 million target group by 2010.

Source: El Bouazzaoui, 2001.

Various studies and programme evaluations have established significant outcomes attributed to ABE beyond the acquisition of literacy and numeracy skills. It is not surprising, for example, that literate mothers

generally see to it that their sons *and daughters* become literate, too. There are definite correlations between parental education levels and children's school enrolment, attendance and learning achievement. This suggests that any serious national effort to achieve universal primary education (UPE) should include a strong ABE component. Together, UPE and ABE can reduce the incidence of illiteracy more quickly.

The link between adult literacy and family planning practices is now well established, and ABE can also lead to improvements in family nutrition, health and childcare. A less visible but important outcome reported by many ABE participants is improved self-confidence, a basic ingredient of empowerment of rural people, especially of women. Literacy and numeracy are directly useful in the marketplace and in management tasks, so these skills, together with certain other ABE content, can lead to more productive livelihoods – an essential factor in alleviating poverty. *Box 9* illustrates some socially useful outcomes attributed to the Total Literacy Campaign in one of India's states.

Box 9. Outcomes of Tamil Nadu's Total Literacy Campaign – India

Drought-prone Pudukottai in Tamil Nadu is one of India's most backward districts. More than 85 per cent of its people live in abject poverty. A transformation in the lives of these people began in 1991 with the launch of the Total Literacy Campaign (TLC) covering almost 250,000 learners, of whom 70 per cent were women. The TLC generated an impressive instance of women's empowerment relating to stone-quarrying. A syndicate of private contractors had traditionally exploited workers, mostly women, in over 450 stone quarries in Pudukottai. But in 1991, when the contractors did not bid above the minimum price set by the government, the District Collector decided to lease the quarries to over 4,000 women who had organized themselves into 152 groups. Control over the quarries greatly increased their economic security. The women linked their new literacy skills to their livelihood. Through the TLC, they also obtained special training in leadership, decision-making, management and business organization.

Where actively implemented, the TLC has enabled millions to read and write. It has opened up extraordinary opportunities, especially for women and those belonging to socially backward castes. The TLC has helped to change social attitudes, modify notions of institutional responsibilities and revise concepts of social accountability. Significant changes are noticeable in the

self-esteem and confidence of women. Another major achievement of TLC in many districts is that it has boosted the demand for primary education, leading to higher enrolment, improved accountability and greater parental expectations from the schooling system. The campaigns have also promoted greater social cohesion. For instance, the expert group evaluating the TLC in 1994 reported: “During the height of communal tensions in 1990-92, the campaign areas, specially villages, did not witness any major communal disturbances. Incidents with communal potential were nipped in the bud by the villagers and major disturbances averted”.

Source: INRULED, 2001, quoting *Public report on basic education in India*, 1999, Oxford University Press.

Considerable research and experimentation has gone into developing effective pedagogies for use with adults. Those that appear more successful seek to be participatory, respecting the adult learner, who brings considerable life experience and (usually) strong motivation to the learning situation. This pedagogical approach helps build the learner’s self-confidence and develops positive group dynamics. However, it demands very competent teachers, so it is difficult to apply on a large scale. Many ABE programmes even avoid using the term ‘teacher’, with its connotation of schooling, preferring terms like ‘facilitator’ or ‘co-ordinator’ that imply the learning group is composed of peers, each making a contribution. This is an important feature of the *REFLECT approach to literacy learning*, which was developed during the 1990s and is now being used in many low-income countries, particularly in rural areas and helps to ensure that literacy programmes are relevant to the needs of the rural people and are planned and managed in a participatory way (see *Box 10*).

Box 10. The REFLECT approach to literacy teaching

The Regenerated Freirean Literacy through Empowering Community Techniques (REFLECT) approach to literacy teaching makes use of Participatory Rural Appraisal techniques to identify local issues of shared concern to the participants in a REFLECT circle. The teaching of literacy is built upon the visual materials generated in each community, such as maps, matrices, calendars or diagrams. A strong link is made between active discussion of local issues and the capacity of people to communicate about them and act upon them. Empowering participants so that they are better

enabled to improve their conditions of life is a central objective and the need for literacy is seen as interwoven with this.

The emphasis is on actively producing texts rather than passive reading. Core materials to read are produced by participants with the help of a facilitator. No primers are used as they are seen as barriers to a participatory approach. However, supplementary reading materials are brought into the circles for practice and critical reading.

Literacy facilitators are recruited locally, given a short initial course in REFLECT methodology, typically of two to three weeks' duration. This is followed up by regular bi-weekly (later monthly) meetings of local facilitators, ongoing refresher training (three to five days every few months) and by support/supervision visits about once a month by supervisors who often are of high educational calibre.

An evaluation of REFLECT carried out in 1996 in three countries found that 60 to 70 per cent of the participants completed the initial learning process and acquired basic literacy skills. It found also a number of other positive outcomes evident in children's schooling, health and hygiene practices, community participation, collective action, better management of resources and improved gender roles.

Since its development in the mid-1990s by ActionAid, an international NGO, the REFLECT approach to literacy teaching has been adopted by several governments and some 250 organizations working in 50 countries in Africa, Asia and Latin America.

Source: Lauglo, 2001.

Many ABE programmes use a *functional literacy approach*, which seeks to develop literacy and numeracy skills in a context that is meaningful and motivational to the learners. Some focus on specific issues or skills, such as health, food security or bee keeping, with literacy and numeracy as subordinate objectives. One such programme in Nicaragua used videos as the main training tool, supplemented by simple print materials, to show rural farmers how to raise iguanas, a high protein traditional dish (FAO, 2001). Other ABE programmes have literacy and numeracy as their primary aims, but have learners apply these new skills to acquire other skills and knowledge useful in the household and in the work place. An international panel formulated the following recommendation in this regard: "Literacy and adult continuing education programmes designed for rural transformation must be more than literacy in the narrow sense of the term.

[They] must be functional and practical enough to help individuals survive, develop their full capacities, live and work in dignity, participate in development, improve the quality of their lives, make informed decisions and continue learning” (INRULED, 2001).

Box 11 describes a functional literacy programme in rural areas of the Philippines and lists some of the lessons derived from its assessment.

Box 11. Lessons from a functional literacy programme – Philippines

In 1996, the Association for Non-Traditional Education in the Philippines (ANTEP), which is committed to exploring different ways of providing education to youth and adults, began a non-formal education programme in partnership with the Philippines-Canada Development Fund. ANTEP developed a new curriculum that was in many ways a reversal of conventional curricula. Instead of starting with concrete subjects, such as health and technical skills before moving on to more abstract conceptual learning, the new curriculum started by helping participants to come to their own understanding of major issues of life and society, drawing on religious values and philosophical issues. The curriculum then looked at social concerns, such as living in harmony with people who are different. Technical skills needed to earn a living were introduced only at a later stage. Literacy skills were developed throughout the programme but more specifically in the later stage, whereas the earlier stages put more emphasis on oral teaching activities. In December 1998, ANTEP conducted an end-of-programme assessment of the pilot period. Some lessons it drew were:

- Functional literacy sessions served as an effective tool for raising awareness of socially relevant issues like child abuse, gender and the environment.
- Increased sensitivity and skills to use appropriate materials in local situations helped learners relate to the class discussions, thus facilitating meaningful learning.
- Functional literacy is a vital ingredient in any community development programme and allows greater participation and ownership.
- Continuous transformation of the lives of learners should be ensured after the programme ends by bringing them into other mainstream development activities, such as co-operatives and women’s organizations.

- Involving local government units and other stakeholders is crucial for the sustainability of the programme.
- At the start of the programme it is important to identify local facilitators, who can then grow with the programme and acquire hands-on training.
- Built-in monitoring, evaluation and feedback systems allow for any needed revision of the learning processes used and ensure better quality.
- Eliciting the learners' contributions adds to the community's sense of ownership, thus ensuring the success of the programme.
- Involving the families of the learners during the preparatory stage reduces the incidence of dropout and sustains the motivation of the learners to continue with the sessions.

Source: INRULED, 2001, quoting Asia-South Pacific Bureau of Adult Education, 2000, Beyond literacy – case studies from Asia and the Pacific.

An important issue in designing ABE programmes is the choice of the language. As for children, adults learn to read and write more easily in their mother tongue, or at least in a language familiar to them. However, some vernaculars current in rural areas have little or no literature, so offering literacy in them serves little purpose, unless provision is made for *post-literacy activities*, e.g. production of pamphlets, readers and rural newspaper in the vernacular. Another strategy is to begin literacy instruction in a vernacular, then at a later stage, switch to the official national language.

The content and pedagogical approach used in ABE programmes should take into account learners' needs and expectations regarding ABE credentials and their equivalence with levels of schooling. Some form of ABE credential can serve as an additional motivation for the learner and may be important for employment opportunities and for access to continuing education. However, in seeking equivalence with schooling, ABE programmes risk losing some flexibility and compromising their participatory nature (Lauglo, 2001).

In the low-income countries, the main providers of basic education for adults are voluntary organizations and local community associations, often with support from international NGOs and funding agencies. Some governments have set up special departments or mechanisms to promote literacy activities, such as Tamil Nadu's Total Literacy Campaign (see *Box 9* above). Funding is often directed to some mix of programmes run by NGOs and perhaps others run directly by public authorities (e.g.

agricultural extension service, ministry of health). In other cases, government and NGOs divide responsibilities for ABE according to their respective comparative advantage, usually with NGOs and local community associations in direct contact with the adult learners. Senegal, for instance, has an established framework for government-NGO co-operation in ABE (see *Box 12* below). Such arrangements can encourage and facilitate NGO initiatives, while enabling the public authorities to orient ABE activities towards general policy objectives.

In defining a priority or target group for an ABE programme, many providers use age as one criterion, giving preference, for example, to adolescents and adults in the productive and reproductive age range of approximately 15 to 45. Women, especially young mothers, are targeted often because of their role in the household (e.g. cooking, childcare, kitchen gardening) and the multiplier effect on other family members. Some ABE programmes target specific vocational or functional categories (e.g. farmers, craftsmen, village leaders) that correspond to their content. With few exceptions, the mass literacy campaigns of earlier years have been abandoned in favour of longer-term and more structured ABE programmes. However, campaigns to raise public awareness of the importance of literacy can be useful in preparing and supporting ABE programmes.

Box 12. Outsourcing literacy to NGOs – Senegal

Senegal's PAPF programme (literacy, with a priority for women), run by the Ministry of Basic Education and National Languages, has reached more than 150,000 learners since 1995. More than 80 per cent of the learners are in the 15-39 age group and over three-quarters are women. The functional literacy classes offer a minimum of 300 hours of instruction over 18 months, with at least 20 learners per class. Literacy is taught in local languages and providers choose curricula from a list approved by the National Directorate of Literacy and Basic Education. PAPF includes a post-literacy programme and newspapers in local languages in each region. Its projects relate to agriculture, health and the environment.

The actual teaching is outsourced to more than 420 local NGO providers (up from 77 providers in 1995). Prospective literacy providers submit applications to a national selection board appointed by the Minister. The Ministry concentrates on planning and programme design, training the providers, capacity development, and assuring quality. The Directorate looks

after monitoring and evaluation. Each NGO literacy provider recruits most of its teachers locally from applicants with a secondary school background. There is one supervisor per ten classes. The unit recurrent cost of the 18-month programme (excluding government overheads) is around US\$40. Participants are expected to make at least a minimum contribution equivalent to about US\$4.50. The literacy providers are required to furnish written materials 'at a reasonable price'.

Source: Lauglo, 2001: 34.

ABE is an investment that deserves far more attention, effort and resources than it currently receives. *Box 13* gives a summary of the recommendations of the World Bank to its clients that are especially relevant to ABE programmes in rural areas. Many of these recommendations and many of the points covered in the preceding paragraphs apply also to the provision of basic education to certain categories of marginalized adults (and children) discussed hereafter.

Box 13. World Bank recommendations for Adult Basic Education (ABE)

- Recognize the importance of ABE for achieving Education for All.
- Give strong political leadership to ABE; find good staff for key government positions; be prepared for considerable investment in institutional development. Consider forms of public administration of ABE other than normal government departments.
- Target especially women and out-of-school adolescents.
- Diversify programme to be responsive to local demand.
- Look for opportunities to initiate ABE in already established groups.
- Build partnerships with NGOs/CBOs and with enterprises.
- Use local languages for initial literacy teaching and provide a route to the official language for those who have acquired literacy.
- Recruit teachers locally and use short-term contracts.
- Good ABE curricula and materials respond to what learners want and adapt to the local context.
- Prevention of HIV and caring for AIDS victims should be part of the ABE curriculum.
- Back ABE up with radio, but don't expect much match between the timing of radio programme and topics taught by instructors.

- Good methods will show respect for the learners and seek to make them active participants.
- Accommodate within ABE opportunities for continuing education.
- Monitor ABE carefully but in ways that are participatory and helpful to providers.
- No one who wishes to attend ABE should be unable to do so because of an inability to pay.

Source: Lauglo, 2001.

2.1.7 Remote rural populations

Remote rural populations are neglected or under-served by the school system in many low-income countries. In addition to the geographical factors that tend to isolate them, people living in remote rural areas may be further marginalized from the mainstream by ethnicity, culture, language, or religion, as well as their material poverty. The centrally determined school curriculum may appear to them as quite irrelevant to their very different basic learning needs. In this connection, a recent case study of remote highland communities in Thailand noted a growing awareness of the need to harmonize modern knowledge and local wisdom. Consequently, to maintain the socio-cultural heritage and integrity through inter-generation communication, the importance of local curriculum development is recognized by a number of communities, as well as concerned governmental and non-governmental organizations (FAO/RAP, 2002).⁷

Where cultural differences are not a factor and where roads, communications and other infrastructure reach into remote areas, providing schools and other basic education facilities is largely a matter of political will and allocation of sufficient resources. *Box 14* describes the experience of Cuba where basic education is taken to remote rural areas by extending the regular school system and adapting it to the local conditions, e.g. multigrade classrooms to deal with small numbers of pupils of varying ages.

7. The issue of curriculum relevance will be discussed in more depth in *Section 3*.

Box 14. Reaching out to rural children – Cuba

The Cuban government has developed explicit strategies for reaching children unlikely to be well-served by the standard school model, in particular children living in isolated rural areas, such as mountainous areas, as well as children with disabilities and other special needs. Overall, Cuba has approximately 2000 schools with less than ten students, usually located in remote areas. Such small schools offer multigrade instruction through grade 4, in which case teachers receive training in teaching in multigrade classrooms. In achievement scores, there are no significant statistical differences between rural and urban areas. There are no drop-outs at the primary school level.

These results challenge the notion that schools must be of a certain size to be effective. Perhaps more importantly, they also question the perception that rural schools are necessarily of lower quality. In Cuba's case, rural schools are provided with adequate levels of human and physical resources as well as special features to meet their needs. In return, rural schools provide education that contributes to the development of rural areas, thus motivating families, teachers and students.

To encourage rural populations not to emigrate to urban areas, a special plan was developed to provide education in the mountainous areas. Schools were planned to provide the entire education cycle, with curricula adapted to local needs. To ensure the stability of the teacher workforce in rural schools, the system promotes volunteer teachers who commit themselves to staying in the area for two or more years. Young teachers living in such areas are provided incentives – assistance in home construction, radios, lamps, etc.

Some 725,000 people, including 152,000 pupils, live in Cuba's mountainous regions. They are served by 27 pre-primary schools and 2,400 primary schools, some with as few as four children, 27 special education schools, 89 basic secondary schools and 17 pre-university schools. Educational institutions are developed in conjunction with regional plans. Infrastructure and services were developed to attract people to the region, for example, along with production incentives such as co-operatives entitled to credit from the state.

Source: Gasperini, 2001: 8.

The situation in many other low-income countries is quite different from that of Cuba, however, with important cultural differences and a lack of physical and administrative infrastructures impeding or limiting

the provision of basic education in remote areas. An interesting initiative to reach minority ethnic groups in the remote mountainous areas of the People's Democratic Republic of Laos is described in *Box 15*. The project targets young women in particular and makes use of radio, audio tapes and printed materials supported by a network of village volunteers and visiting facilitators. The project's sponsors attribute its success to careful consultation with the participants regarding the content, which is linked to specific development initiatives, such as the introduction of new crops and production methods.

Box 15. Multi-channel learning for remote areas – Laos

A poor, mountainous, heavily forested country. A young population composed of some 50 ethnic groups speaking several distinct languages and nearly half living below the official poverty line. A literacy rate for men of 74 per cent, for women of 48 per cent – but much lower for women in the remote mountainous areas. More than 4,000 villages with no primary school.

During the 1990s, as part of its efforts to reduce rural poverty, the government of the Lao People's Democratic Republic, with help from several external partners, began providing non-formal basic education especially to rural women, many of whom had little or no schooling. Over half the girls from ethnic minorities in rural areas never attend school and only a few who enter school remain more than two years.

Building on its initial experience, the Laotian Non-formal Education Department, with UNESCO's help and Norwegian funding, began in 1997 a distance basic education project in support of sustainable rural development in three target provinces. It aimed to create a supportive environment for basic learning in isolated areas by using a multi-channel learning system consisting of radio broadcasts, audiotapes, written material (using simple vocabulary, big letters, and many illustrations), itinerant facilitators and village volunteers. Each village is provided with a mobile library and receives newspapers designed to support and develop literacy skills. The content of the learning materials is based on information collected from the participants through the initial needs assessment exercise and subsequent feedback.

Villagers gather periodically in pagodas or other public buildings to discuss the materials and listen to the radio broadcasts or audiotapes. The village volunteer leads the discussion and ensures that the issues presented are understood. Everybody has a chance to talk and share opinions in a relaxed atmosphere.

The organizers quickly noted that villagers demanded practical information about real problems, like chicken diseases and about income-earning activities. Learning how to process raw sugar into a marketable product, for example, has enabled some families to increase their incomes. Other signs of development in the villages attributable to the project include a dramatic increase in the production of fruits and vegetables and a 60 per cent reduction in cases of malaria. The project has also trained a core staff experienced in developing needs-based distance education materials.

The project's success lies in the effectiveness of its multi-channel approach that reaches large numbers of learners and helps those with less education to benefit from more advanced learners. Now villagers understand that family planning and preventing disease are as important as increasing their crop yields. Together, these improvements lead to increasing their family income and improving their lives. The project has now been extended to a fourth province and 52 additional villages.

Source: UNESCO, 2001a.

2.1.8 Nomadic peoples

Nomadic peoples, unlike most marginalized groups in remote rural areas, have a distinct lifestyle that sets them apart from the sedentary 'host population'. They are often desperately poor in material terms, and subject to the vagaries of the climate. In addition, they may differ from the majority population by ethnicity, religion and language. Such differences can be a source of antagonism, mistrust and even conflict between them. The sedentary population may consider nomads as 'foreigners' with an inferior, primitive way of life. These attitudes can influence public policy towards them, which in turn delimits the ways and means employed to meet their basic learning needs.⁸

In Africa, the general policy of governments in respect to nomadic peoples is not spelled out clearly but appears in practice to seek to settle them and adapt them to the modern economy. Some governments place restrictions on the nomadic way of life or simply neglect them, perhaps in the expectation that sooner or later they will have to settle down and become normal citizens. By contrast, public policy in Mongolia seeks to make the pastoral life more productive, secure and comfortable.

8. This sub-section draws largely on the study of the literature on education for nomads in East Africa conducted by Carr-Hill and Peart (2002).

In the provision of basic education to nomadic peoples, the explicit or implicit goals vary from country to country but appear to range from settlement, integration, and increased government control, to protecting the nomadic culture, improving economic production, developing life skills, promoting empowerment and self-determination. Whether the dominant aim pertains to citizenship or to quality of life, literacy is considered vital both by providers and learners.

Whatever the educational goals may be, the generally low participation rate of nomads reflects their differing perspective as to the value of education programmes. According to one analysis, education providers attribute low enrolment to parental ignorance, the low motivation of teachers and the logistical problems caused by nomadic mobility and remoteness, whereas nomads are bothered by the alien language and culture imposed on their children. Similarly, providers attribute high drop-out rates to parental conservatism, child labour and curriculum irrelevance, while nomads withdraw their children because they perceive schooling to be of low quality, exclude parental involvement and provide a risk-prone and hostile environment.

Most observers would probably agree that schooling, especially through boarding schools, tends to undermine nomadic culture and traditional values, but its threat to the economic structure of pastoralism, which depends on household and collective responsibilities (versus the individualism of Western education), is less evident. Nomads consider children's work "as a process of socialization, progressively initiating children into work and transmitting skills that will enable them to support themselves and their parents and contribute to the community. [...] the most important thing one can do for a child is to teach him or her to work ... death can overcome the parents at any time; that's why it is essential to train children young to the work of the parents." ⁹ Insofar as schooling interferes with this 'duty' of parents, it is perceived as antagonistic to the nomadic way of life.

However, some nomads are willing to risk sending at least one child to school, perhaps in the hope of thus acquiring some useful skills or other benefits for the household or to gain some social status by having a family member pass into the 'modern' world. According to one study of nomads

9. Carr-Hill and Peart (2002), quoting from *Towards responsive schools: supporting better schooling for disadvantaged children. Case studies from Save the Children*, DFID Education Paper No. 38, Department for International Development, London.

in Kenya, they make a careful choice of which child to send to school in order to minimize the loss to the household economy. The firstborn son and the elder sons needed for herding, as well as pubescent girls, will be kept away from school so long as the pastoral life is considered viable.¹⁰ In Mongolia, however, the child chosen for schooling will likely be a girl, whose education is expected eventually to link the household to the wider society – which shares much the same culture and ethnicity, but differs in livelihood and lifestyle.

Apart from the issues of policy and perceptions regarding education, providing basic education to nomadic groups involves some major challenges in respect to content and logistics. There is abundant evidence that nomads value literacy and numeracy skills, but other elements of the nationally prescribed curriculum may appear less useful to them. The lack of curriculum relevance is often cited as a major reason for the low participation and completion rates of nomadic children. This suggests that nomads need to be much more involved in planning the curriculum designed for their children. A related matter is the medium of instruction. Using the prevalent mother tongue can help strengthen the group's cultural identity, whereas use of a national language may help integrate the group more closely with the mainstream national culture – or alienate the nomads further. This seems another matter well worth negotiating with the group concerned.

The usual, fixed location school model is generally inappropriate for nomadic peoples and can be difficult to maintain where water is scarce, electric power is unavailable and transportation is precarious much of the year. Providing schools with boarding facilities, though a costly option, has been used with mixed success in some countries. Parents are often reluctant to lose the custody and household labour of their sons and daughters and to entrust them to people they don't know. The success of boarding schools depends on the quality of life within the school and the effective security (physical and moral) in and around it. However, in rural areas of low food security, fixed location schools with a feeding programme become attractive.

A mobile school seems, in principle, a more promising solution, but it has also proved problematic. Administrative difficulties, combined with shortcomings in the design and maintenance of collapsible classrooms and

10. Carr-Hill and Peart (2002), quoting Ponsi (1988).

the reluctance of some teachers to adapt to a nomadic lifestyle have undermined the planned use of mobile schools in some cases, as in Nigeria. Also, mobile schools may prove not to be cost-effective, given the low population densities and dispersed settlement patterns of some nomadic groups. However, the tent schools used in imperial Iran's Tribal Education Programme during the 1950s and 1960s were considered quite effective, and small scale experimentation with mobile schools continues to show promise. One such experiment in a rural area of Kenya is described in *Box 16* below.

Box 16. Mobile schools – Kenya

During the last twenty years no significant attempt has been made to provide the children of practising pastoralists with an education on terms that are consistent with their pastoral lifestyle. Efforts to do so tend to be confined to small-scale, innovative projects such as the one implemented by the Nomadic Primary Health Care Programme (NPHC) in Wajir. Recognizing the problems faced by pastoralists, the NPHC initiated a mobile school (Hanuniye) project in 1995 which is intended to overcome the exclusion of pastoralists from education because of their mobility.

The Hanuniye project has based its implementation strategy on what might be called the *dugsi* approach*, which has a mobile teacher living with the family, or herding group of which they are a part, in just the same way that a Koranic teacher would live with them. The attraction of this model is that it is consistent with daily mobility needs – with lessons designed to fit around household labour arrangements – as well as long distance mobility.

So far as participation is concerned, the Hanuniye project reportedly enrolled 3,148 boys and 2,830 girls as pupils between 1995-99. Assuming these figures are accurate, it is a remarkably high number representing approximately 50 per cent of the total district primary enrolment. What is even more notable is the approximate equivalence of the figures for girls and boys. Such a significant and quick uptake of the programme challenges previous notions of pastoralists being uninterested in or dismissive of education and suggests instead that it is the way in which education was made available which has been the major stumbling block to their effective participation.

* *dugsi* is a Somali traditional 'school' teaching children to memorize and recite the Koran.

Source: Carr-Hill and Peart, 2002.

Another possible solution, but one lacking good examples, would be to make use of existing forms of traditional education found in some nomadic groups. For example, various forms of Koranic schools move with certain nomadic groups in Africa. Their function is clearly to provide religious education, and they are viewed as complementary and not an alternative to government schooling. But they are often the only organized learning on offer. Theoretically, some secular subjects could be added to the 'curriculum' of Koranic schools where public schools are not available, but this entails convincing and training the Koranic teachers, and supplying them with appropriate instructional materials. Such an arrangement is being used in some settled rural communities in the state of Uttar Pradesh in India, whereby a literacy component is now included in the Muslim schools (Moulton, 2001).

Open and distance learning (ODL) seems to offer another promising approach to reach nomadic peoples, but so far it has had limited impact, at least in Africa. ODL can offer nomads (adults as well as children) on the move access to education, which can be designed with the flexibility needed to fit their lifestyle. Several technologies and delivery models have been used, including radio broadcasts, mobile cinema, audio cassettes and printed materials, combined with self-help study groups, mobile schools and fixed location schools. Unfortunately, the results have sometimes been quite disappointing and the expected economies of scale are not easily achieved with small, dispersed nomadic groups needing intensive support systems for effective learning.

However, ODL has been used quite successfully in the non-formal education project for Gobi women in Mongolia (see *Box 17*). This may be due in part to the flexible design of the project, but also to the strong motivation of the adult women learners.

Box 17. Educating women in the Gobi desert – Mongolia

The Gobi desert occupies the southern third of Mongolia and is home to about half a million people scattered sparsely in some 150,000 households and leading nomadic or semi-nomadic lives. They move their herds of sheep, goats, camels, horses, cows and yaks three or four times a year. Gobi temperatures range from 40°C in summer to –40°C in winter. “In winter we struggle to survive and the rest of the year we struggle to prepare for winter” is one description of the nomadic life.

With the collapse of the Soviet Union in 1990, Mongolia’s transition from a largely dependent and centrally planned economy to a market economy brought additional hardships for urban and rural dwellers, but also opened new opportunities. By 1995, nearly all livestock was in private hands and herders’ work took on a different pattern. Households became responsible for producing and marketing their own goods. The decrease in free and local services created an urgent need for self-reliance. These changes increased the workload of women and reduced their opportunities for leisure and access to education, health care and information.

Gobi women, especially heads of households, were identified as a particularly vulnerable group in the transition period. In 1991, with the support of UNESCO and the Danish International Development Assistance, the Government of Mongolia launched a non-formal distance education project for Gobi women. The aim was to take learning opportunities to women wherever they might be and in a manner that would allow them to carry on with their work and remain with their families.

A careful needs analysis, involving consultations with over 140 nomadic families, as well as local leaders, was carried out in three of the six Gobi provinces in 1992. Gradually the women became articulate in defining their own needs and learning agenda. This came to include knowledge and skills in four areas: *Family care* (family planning, health, hygiene, nutrition, first aid); *Survival and income-generation skills* (livestock rearing techniques; producing wool; refining camel fleece; making felt, camel saddles and boots; recycling old clothing; embroidery and quilting; baking bread; preparing milk products; using plants to make simple medicines or cosmetics or dyes; converting animal dung into fuel; processing hides and working with leather; etc.); *Business skills* (accounting, negotiating prices, marketing, etc.); *Literacy and numeracy skills* (maths, civics, the environment, current affairs, Mongolian fairy tales).

The needs analysis helped shape the programme to fit the life-style and circumstances of the Gobi women and stimulated considerable interest within

the target group. By 1996, some 15,000 nomadic women between the ages of 15 and 45 were taking part in project activities offered through radio broadcasts and printed materials, with occasional visits by 620 itinerant teachers. Some 2000 radios and 40,000 batteries were distributed. Small information centres containing project materials were set up in district and provincial settlements, which served as bases for the teachers and their trainers. Women were encouraged to involve their families in learning activities, which extended the project's impact.

The project helped Gobi women to understand how to survive by helping themselves, rather than waiting for help. Social interaction with other women was another important benefit for these women often living in isolation. Thanks to the work of educated and dedicated people in rural areas, the flowering of activity at local level took on a dynamic of its own, supplementing and adapting the project to fit local circumstances. It created strong local ownership of the project and a demand for its continuation and expansion.

During the initial years, project materials and support activities were provided free to all learners. The visiting teachers often paid for their own travel and even for materials needed for teaching aids. Of course this exploitation of their goodwill and purses is not viable in the long run. Some form of cost sharing with learners will likely be needed for the project's continuation and possible expansion.

Source: UNESCO, 1997.

In many cases, non-formal delivery of basic education to nomadic peoples may be more suitable than formal schooling. Successful non-formal programmes were found to have all or some of the following features:

- delivery within a non-antagonistic, cultural and human environment;
- two-way processes, flexible in structure and content, to respond to changing needs;
- providing skills designed to increase nomads' control over social, economic and political obstacles to their livelihood security (e.g. lobbying, local advocacy);
- linkages with existing government institutions for education and development;
- and informal settings of the learning environment that allow parents' close surveillance over children's security, especially of girls (Carr-Hill and Peart, 2002).

Some further lessons may be drawn from experience with basic education programmes intended for nomadic peoples. Often programmes have failed because the authorities sought to use education to settle nomads. Successful programmes have recognized nomadic culture, adapted education to suit nomadic lifestyles, and taken education by various means to nomads on the move. Nomads appear to dislike 'Western' delivery systems, not education as such. Involving nomads in planning, implementing and evaluating education programmes enhances their impact. Also, as some nomadic groups cross frontiers, the authorities on either side of a frontier should co-operate in providing basic education services for such groups.

2.1.9 Refugees and internally displaced persons (IDPs)

Refugees and internally displaced persons (IDPs) uprooted from their homes by natural disasters or by civil conflicts constitute yet another heterogeneous category of people found in rural areas and who have little or no access to established education services. The world refugee population was estimated to be some 11.5 million in 1998 and the number of IDPs may be around 50 million. Thirty-nine countries have displaced populations exceeding 50,000.¹¹ Although some refugees flee from urban areas, most refugee camps are located in rural areas, sometimes in quite remote areas, usually near a frontier.

A review of educational provision in emergency situations found that displaced people make every effort to provide some form of schooling to their children.¹² Most refugee camps do have schools, but they often lack learning materials and trained teachers. Many camps also have some ECD programme and some literacy and vocational training classes for adolescents and adults. Less often, there are initiatives to provide education for children and adults disabled by landmines or other causes. The host government, assisted by humanitarian agencies and NGOs, generally seeks to help organize educational activities and to provide the basic resources needed, in accordance with international law governing asylum. *Box 18* below presents a sample of the kinds of educational interventions that are organized, often by NGOs, for and with refugees and IDPs.

11. UNESCO (2001b), quoting figures from *UNHCR 1998 Statistical Overview and Internally displaced people: global IDP survey*. Oslo: Norwegian Refugee Council/Earthscan, 1998.

12. UNESCO (2001b). This sub-section is based largely on the findings of this study.

Box 18. Educational actions for refugees and internally displaced persons

- After the signing of the peace agreement in Mozambique in 1992, the UN High Commission for Refugees requested Handicap International to develop an education programme on the danger of landmines for the rural population, as this was indispensable for the security of displaced persons returning to war-torn areas. The programme used the radio and theatre as a means to develop public awareness, which led to significant reduction in the number of landmine-related accidents in rural areas.
- In the Gambella refugee camp in western Ethiopia, Radda Barnen established a committee composed mainly of women to begin a pre-school. The intensive training of pre-school teachers and the successful operation of the programme helped change attitudes about women. Now the community has accepted that women can obtain the necessary qualifications to become teachers, and that girls can perform well in school.
- In Baluchistan Province, Pakistan, Save the Children Federation introduced an innovative 'Health and Literacy' programme for Afghan refugee women in remote rural areas. The women were encouraged to reflect on issues affecting their daily lives as well as learning important health messages.
- The International Rescue Committee, in consultation with the education authorities of Georgia and Azerbaijan, developed innovative non-formal education programmes for internally displaced persons and the local host populations. The programmes include remedial education, health education, creation of libraries, recreational activities and capacity-building for parent-teacher committees and local associations.
- In 1999, the IRC undertook a community-based emergency programme to help some 10,000 internally displaced children to recover from trauma experienced during the civil conflict in Sierra Leone. Community leaders, teachers, youth leaders and parents participated in a cross-cultural workshop to identify methods to support children and adolescents at risk through education, recreation and healing. They received training in child development, psychosocial development, communication skills, leadership, conflict resolution, and identifying children at risk to be referred for special assistance. Youth leaders co-ordinated recreational activities concurrently with education in order to reach large numbers of children.

Source: UNESCO, 2001b.

In emergency situations, providing food and shelter and medical attention is the understandable priority, but there is a growing realization that a rapid educational response is important in meeting the psycho-social needs of displaced children, as well as adults. The IRC programme in Sierra Leone (*Box 18* above) is one example. Basic supplies for education and leisure activities are needed within a few weeks, rather than several months after the emergency starts. Education can help provide a sense of normalcy in an unfamiliar and confining environment and it can provide information (e.g. mine awareness) and skills that learners will need when they return home or when they resettle elsewhere.

Few low-income countries are adequately prepared or have contingency plans to deal with an influx of refugees or with an internal emergency situation. Fortunately, there are several international agencies and non-governmental organizations that have valuable experience and access to resources to assist governments in emergency situations. The Teacher Emergency Package, described in *Box 19*, is one resource that has proved useful in several countries. Each emergency or crisis is unique in some respects, so the appropriate educational response needs to be worked out on a case-by-case basis, preferably in consultation with the population groups concerned. In general, though, these education interventions need to be planned from the beginning as part of a development process that contributes to post-emergency reconstruction of the disrupted education system and to social reconciliation.

Box 19. The Teacher Emergency Package (TEP) – Somalia

UNESCO developed a Teacher Emergency Package (TEP) in Somalia in 1993 as a ready-to-use kit for functional literacy and numeracy instruction for children and it has since been used elsewhere. It is designed to accommodate about 80 children in a two-shift class almost anywhere. This 'school-in-a-box' consists of a kit of materials and a teaching methodology for basic literacy and numeracy in the learners' mother tongue. The teachers' bag contains:

- blackboard paint, brush and tape measure (to enable teachers to create their own blackboard on a wall if necessary),
- white and coloured chalk,
- pens, pencils, pencil sharpeners and felt markers,
- ten 'scrabble sets' (for language and number games),

- three cloth charts (alphabet, numbers and multiplication),
- attendance book and note book,
- a teachers' guide which outlines the pedagogical methods by lesson.

In an accompanying box are student supplies for a total of 80 students (two shifts) consisting of slates, chalk, dusters, exercise books and pencils.

UNICEF, UNHCR and other agencies have supported the use of TEPs in some situations and have also developed other specifications for emergency supplies.

Source: UNESCO, 2001b.

2.1.10 Children and adults with disabilities

Children and adults with disabilities constitute a transversal category whose learning needs are not met well or at all, especially in rural areas. To some extent, these learners face a double discrimination. They are excluded from basic education programmes because of physical, mental or behavioural impairments – or because of negative attitudes in respect to their impairments and they are penalized by the rest of the rural people. Some face exclusion also because of gender, ethnicity, geographical isolation and/or poverty. The World Education Forum advocated a more thoughtful approach to *inclusive education*, which has been defined as a set of processes to increase participation in education and reduce exclusion. Although inclusive education is commonly assumed to imply that learners should be physically in the same place and doing the same activities, another interpretation views inclusion as social acceptance and belonging, with a right to individually relevant learning (UNESCO, 2000c).

Both interpretations need to be adapted to the conditions found in the rural areas of low-income countries. It is certainly not feasible to have appropriately equipped and staffed facilities in most rural communities to meet the needs of learners with certain disabilities. However, many disabled learners can be accommodated in existing schools and non-formal programmes with a reasonable amount of flexibility and goodwill. Sensitizing, encouraging and training school and programme administrators and teachers to recognize and deal with disabilities is a prerequisite to providing basic education opportunities to people with disabilities. Special learning materials are needed in some cases, e.g. reading material in Braille for blind learners and a few donor agencies are experienced in providing technical and financial assistance for this purpose.

Early detection of actual or latent disabilities can often lead to treatment that reduces their gravity and enables the child or adult to participate in learning activities with little or no special attention. Simple screening for visual or hearing impairments, for example, may save a child's schooling. In some rural communities, a programme to sensitize and inform parents about possible disabilities, their treatment and their effects, if any, on a child's ability to learn can help draw out children with disabilities who otherwise may be kept at home because of a sense of shame or ignorance. *Box 20* describes such a programme operating in Jordan.

Box 20. Early detection of learning disabilities – Jordan

Nine-year-old Sahar is a third-grader in preparatory school in Jordan. She has lots of friends and a ready smile – and a hearing aid. When she was an infant, Sahar was wrongly diagnosed as suffering from mental disability as well as hearing problems. As a result, she was not allowed to interact with other children. Her family neither invested in her development nor provided her with proper nutrition.

Sahar is a living example of the importance of detecting disabilities early in a child's life. Since 1993, the Community-Based Rehabilitation (CBR) programme has worked closely with parents, teachers and community volunteers in Al-Mafraq, the expansive northern territory in Jordan, to change attitudes towards disabilities. Parents learn to recognize disabilities and seek help for their children, teachers are especially trained, young women volunteers are recruited to work closely with young children with disabilities and community members assume administrative responsibilities for the programme.

The CBR project is part of national efforts to support 'better parenting' in homes, where three quarters of Jordan's young children are cared for, by increasing the knowledge and skills of all caregivers concerning child rights and the physical, emotional and psychological needs of the child. Whereas previously children had their disabilities either wrongly diagnosed, like Sahar, or even hidden due to a 'culture of shame', there has been a marked change in areas where the CBR project is in place. Parents of children with disabilities now inform and seek assistance from committees set up to help them. Schools integrate children with disability into their classes. And a 1997 survey showed that 80 per cent of the local population's attitudes towards the rights of people with special needs had changed for the better.

And what about the other 20 per cent? They said they already believed that the disabled had rights in the community, but CBR had strengthened those beliefs.

Source: Bellamy, 2001.

2.2 Improving the quality and outcomes of basic education

Efforts to expand basic education programmes to reach more learners in rural areas need to be accompanied by measures to ensure that the content, quality and delivery of those programmes effectively meet learners' needs. Basic education that is seen to be relevant to rural people's learning needs and of good quality is better able to attract and retain learners. Each set of actors and stakeholders has a perspective that needs to be taken into account. For example, one exercise produced the illustrative list of attributes of a good school from the four perspectives shown in *Box 21*.

Box 21. Attributes of a good school

As seen by:

Pupils:

- good relations with teachers
- help with learning difficulties
- good communication with parents

Parents and community:

- accessible to all children
- safety, at school and en route between the home and school
- qualified teachers, sensitive to local customs and conditions
- good learning environment
- good relations and accountability to the community
- good performance in exams

Teachers:

- decent salaries, paid on time
- realistic curriculum with appropriate learning materials
- manageable class size, with motivated pupils
- good performance in exams
- support for teaching in the form of materials and advice

- collegial teaching staff
- impartial and honest school management
- recognition of achievement and opportunities to advance professionally

Administrators and inspectors:

- good performance in exams
- good record of attendance
- strong working relationships among staff
- extra-curricular activities
- good relations with the community
- orderly, safe and well managed school environment

Source: World Bank, 2000a.

2.2.1 In the provision of basic education a key actor is the teacher

Whether designated as ‘instructor’, ‘facilitator’, ‘animator’ or whatever, the teacher is a key actor. A well-trained and motivated teacher is better able to stimulate and guide learners, whether children or adults, at least in the early stages of learning. Selecting teachers for rural assignments is generally problematic because of the difficult living and working conditions, often accompanied by disincentives, such as a lower pay scale and less opportunity for professional advancement. NGO and private for-profit education providers are sometimes more successful than the education authorities at finding solutions. Recruiting and training men *and women* teachers locally, when feasible, may reduce costs, ensure that teachers know the local language and customs and are acceptable and accountable to the local community. Even if salaries cannot be topped up, rural teaching assignments may be made more attractive by incentives in the form of access to further education and training or provision of living quarters or transport.

The HIV/AIDS pandemic is eliminating large numbers of teachers in many developing countries and it is simply not possible to replace them anytime soon with carefully selected and well trained teachers. Immediate, flexible alternatives are needed. ‘Para-teachers’, adults with some secondary education who are willing to fill the void, can be a temporary solution. Such teachers sometimes can save the rural school through their dedication and ‘magic’ (see *Box 22*). However, they need some essential minimum

orientation for rural teaching (e.g. multigrade classrooms), followed by in-service training and support and supervision by more experienced educators. In some situations, local volunteer teacher aides can help teachers to cope with large numbers of pupils of varying ages.

Box 22. The anonymous and real magician

It can only be considered magic that a human being

With little or no training

With little support or professional guidance

Who lives in a thatched hut, badly ventilated and scarcely illuminated

With no shops close by, and water miles away

At five or ten kilometres from school, that she or he will have to walk

Two times a day (in the morning and the afternoon)

Who receives a salary just enough to buy a week's food, how many times
paid late

And that doesn't even buy clothes or furniture

... Is able to make a child ...

Who walked five to ten kilometres to get to school

After a night sleeping on a ragged mat

In a hut with many cracks and roaming cold

Not having eaten much

After having had to complete diverse domestic chores

... Learn to read, write and count ...

In the shadow of a tree

Sitting on the ground

In groups of 70 children

With no chalk or didactic means

With no books or notebooks

With no pens or pencils.

It's magic, for the esoteric; a miracle, for the religious. Heroism, for the people and for each child who, from that nothing, acquires knowledge and develops skills. These are the anonymous heroes of each nation. They are not heroes of war. Their only weapons are a tremendous love for children and a tenacious desire to contribute to a better world. They are the heroes of peace.

Source: UNICEF, 2002.

Programmes for adolescents and adults often need several instructors with different skills. The trained literacy facilitator, for example, can teach reading and writing, whereas lessons relating to health issues or new crop techniques might better be led by personnel with the relevant technical background. Although a variety of skills and experience can be found in most rural communities, recruiting literacy facilitators and technical subject teachers and co-ordinating their inputs can be problematic in some rural settings. Videos are sometimes used to substitute for technical subject teachers, as in the ABE project that introduced iguana raising in Nicaragua.

2.2.2. The relevance of the curricula

The relevance of the curricula used in primary schooling and other basic education programmes in rural areas determines their appeal to learners and their effectiveness at meeting basic learning needs. Defining what is 'basic' and what are true 'needs' is not always evident. Most learners, whether children or adults, want and expect to learn to read and write and manipulate numbers, but their expectations regarding other content and skills can vary. Experience suggests at least four guidelines for designing basic education content for learners in rural areas. First, the curriculum should relate to the local context, customs, livelihoods and rural development activities. Second, it should take due account of the teachers' qualifications and training (although ideally these should be in accord with the curriculum). Third, it should make use of locally available skills, knowledge and other resources. Fourth, it should respond to the expressed wishes of the community (i.e. be demand-driven), determined through consultation and negotiation with the community, or the adult learners. The experience described in *Box 23* largely illustrates this approach.

Box 23. Learning in the rice fields

A discovery learning process to promote an ecological approach to plant protection called Integrated Pest Management (IPM) is being applied in some primary and secondary schools, as well as adult education programmes, in several Asian countries. With funding from the governments of Australia and Norway and training inputs from FAO, the IPM Student Field Programme was designed in collaboration with schools, communities, local NGOs, the ministries responsible for Education and Agriculture and

World Education Asia. Curricula, classroom materials and teacher training guides were developed to support the programme. As students learn about agriculture and the environment, they develop skills in language, mathematics and science. They also learn teamwork, responsibility, self-confidence, decision-making skills and become independent learners.

World Education Asia pioneered the IPM educational methods in Thai primary education, beginning with the sixth level students in the Wat Nong Mu School in 1995. The school curriculum includes an environmental education programme using a multidisciplinary, active learning approach. Field samples are collected and experiments are conducted with soil and insects. Science classes look at rice field ecology, maths teachers help pupils calculate field data, language classes put the findings into convincing presentations and reports, while art classes graphically represent insects and plants. Discovery learning involves both teachers and learners in actively seeking solutions to the problems they uncover. Parents were initially displeased to see their children spending school hours in the rice fields, but as children became more motivated, interested and involved, parents became more supportive. Within a few years, the IPM programme spread to 22 schools in two Thai provinces.

The IPM Student Field School Programme promises to be a significant innovation in basic education. It brings together teams of agricultural specialists, teachers and local farmers to teach about key rural issues of food security and environmental protection. The programme promotes the accountability of rural schools to parents for the quality and relevance of their instruction and encourages parents to become involved in the schools. It helps open up school governance to community participation by working through Community-School Management Committees. The programme also contributes to the continuing education of teachers.

Source: FAO, 2001.

The inclusion of skills relating to livelihoods will certainly attract adolescent and adult learners, but they may request and appreciate less utilitarian content as well, such as history, music and religion. Some educators advocate including subjects such as human rights, avoidance and resolution of conflicts, HIV/AIDS and other health topics. Whatever the configuration of content may be, basic education should equip learners to continue learning, apply critical thinking and cope with the changes they will encounter in life.

However, the primary school curriculum is usually determined at the national level and designed for urban pupils. Often it is packed with subjects, each useful in itself but constituting together a heavy load for even the cleverest pupil. Non-formal programmes often achieve better learning results by focusing on a few core subjects. The margin for adaptation of the curriculum to fit local learning needs is often limited, but school heads and other supervisors can be encouraged to seek and allow more flexibility in applying the curriculum in rural areas. The experience described in *Box 24* below is another example of an innovative and flexible approach to providing basic education geared to an agrarian rural area.

Box 24. Providing affordable agricultural education – Brazil

The State of Bahia, in the northeast of Brazil, is relatively poor, with an economy based mainly on agriculture but also on chemical, petroleum and pharmacological industries. In recent years the authorities have planned development projects for the cities, but have made little investment in the rural areas. The consequence is a migration of rural people to the cities with the hope of finding a better life. To counter this rural emigration, *Associação Escola Família Bahia* (AECOFABA), is running some 30 Family Schools in Bahia. The aim is to educate young people to follow the customs and culture of their family and community. The schools are always located in rural areas and accept young farmers from different parts of the country. AECOFABA manages and co-ordinates the school programmes, engages teachers and guarantees the learning materials. It is assisted by the Italian government and *Opera di Promozione dell'Alfabetizzazione nel Mondo* (OPAM), an NGO.

The federal government of Brazil provides the first four years of primary schooling but not more. The Family Schools give farmers' children the opportunity to continue their studies in an affordable way. The Family Schools rotate work and school. Pupils alternatively spend two weeks studying at school, then two weeks working at home, which ensures that pupils are not totally separated from their community and family. This rotation pleases the families because their youngsters can continue their duties to help the family and it also allows the schools to enrol a larger number of pupils in shifts.

Pupils spend three years studying practical and theoretical subjects. The curriculum includes social science, mathematics and agricultural

subjects. During the afternoon, pupils spend three hours in the school's orchard and vegetable garden. Here they learn techniques how to sow, cultivate and harvest crops, breed small animals and bee keeping. The schools use the goods produced to feed the pupils and to buy additional supplies in the local market. At the end of each two-week school session, the cost of the purchased goods is calculated and shared out among the pupils and this is the only amount they pay for their schooling.

The Family Schools encourage sustainable agriculture and conservation of the environment and natural resources. Pupils study soil control, water preservation and careful energy use. When they return to their rural communities they have a good knowledge of agriculture and a social consciousness.

Source: Emiliani and Gasperini, 2002.

The Escuela Nueva (New School) programme developed in Latin America over the past 30 years demonstrates that it is definitely possible to achieve a functional balance in the basic education curriculum that respects national criteria and responds to local rural conditions (see *Box 25*). This and similar initiatives combine the national common core content and supplementary content based on the local culture and economy, often making use of local artisans, story-tellers, and other human resources in the community.

Box 25. Escuela Nueva (New Schools) – Colombia

- (i) What did this approach aim to do? What were some of the key background features?

As in many other developing countries, rural education has lagged behind in Colombia. The Escuela Nueva system aims to provide cost-effective quality education to underserved rural communities. It was initially (1975) a centrally inspired pilot project in Colombia and then spread to a nationwide programme expanded to all states, an alternative system within formal state education.

- (ii) What is the approach?

Escuela Nueva has four inter-related basic components:

Community Involvement to Support Their Children's Learning:
Teachers are given a manual and taught practical suggestions of how

to have the school and community reciprocally act as a learning resource for one another.

School Programme: Escuela Nueva schools generally consist of one to three classrooms with one or two teachers who teach multigraded classes for the entire five year cycle.

Curriculum: Materials used in the curriculum are designed to promote active learning – to teach children how to think, analyze, investigate, create and apply knowledge. Many of the materials are self-paced and the teacher is a facilitator/manager of the resources to enable learning.

Teacher Training: Training is based on a change of both social and pedagogical role to be a learning facilitator and community leader. Training involves visits to Escuela Nueva demonstration schools, and a basic training of three one-week courses organized by the decentralized regional unit in charge of training with intervening practice periods, distributed over the first school year.

Administration/Management: The Escuela Nueva Management system is a decentralized programme with three administrative levels, the centre, the department and the school. The centre is a national co-ordination level in the MOE which determines policies and provides technical assistance. In each regional department there is a parallel committee to carry out universalization plans and to supervise and support schools. Management functions within schools are jointly carried out by teachers and students and teachers facilitate the establishment of a student government.

Costs: Cost estimates of the Escuela Nueva programme overall show the programme to be more costly than the conventional system, since it is a 'value-added' model. McEwan (undated in McGinn 1996) estimated an annual, per-student cost of \$120 for Escuela Nueva compared with \$84 in the conventional system. Higher learning outcomes and possibly lower dropout rates may make it more cost-effective overall.

- (iii) How successful was the approach? How was this success determined? By 1992, a few years after Escuela Nueva had been brought to scale in 18,000 rural schools, the participation rate had risen to 81 per cent for girls and 78 per cent for boys in these areas compared with 87 per cent and 86 per cent respectively in urban areas. The roughly 30 per cent rise in rural enrolments since 1975 may have been partially a result of Escuela Nueva, since over half of Colombia's rural schools had adopted the model. Several evaluations have been conducted that together show modestly higher achievement results for Escuela Nueva over the conventional system. The fact that Escuela Nueva had been

implemented first in the most disadvantaged schools with fewer teachers tends to increase the significance of the results. Not all schools implement all components of the Escuela Nueva system. Evidence of programme quality is mixed, particularly after going to scale and several elements of the programme e.g. supervisory visits not being able to be maintained to the original level. Overall, the programme has been found to be successful in raising the quality of basic education in a cost-effective manner.

Source: Rugh and Bossert, 1998.

Furthermore, basic education also has a less evident ‘soft curriculum’, which covers important aspects of personal development, such as self-esteem, a commitment to excellence, democratic behaviour and interpersonal skills, such as teamwork, tolerance and leadership. This aspect of the curriculum depends heavily on the local teacher-learner relationship, especially the pedagogical style (e.g. participatory or authoritarian) and the discipline governing the learning situation (INRULED, 2001).

2.2.3 Language of instruction

Language of instruction represents an important factor affecting the *perceived relevance* of a basic education programme, as well as its effectiveness. Instruction in the mother tongue certainly facilitates learning in the early stages. However, it may be necessary – and expected – that another language (the official language or another of wide usage) be introduced into the curriculum at a later stage, particularly if there is little or no literature in the mother tongue. Parents have been known to object to their children being ‘excluded’ from learning in a dominant language. Whatever the case, the teacher should be fully fluent in the language of instruction and learning materials in that language should be available in the classroom.

2.2.4 Learning materials

Learning materials constitute an important input to basic education that is generally deficient, both in quality and quantity, in rural areas. Classrooms without useable blackboards, maps, or charts are common. Textbooks, readers, writing slates, exercise books, chalk, pencils and pens are too often in short supply. Even the teacher may have no course guides

or resource materials. Efforts to improve the quality and outcomes of basic education need to give early attention to these material supports for learning. As seen earlier (see *Box 10*), some ABE programmes have learners develop and use some of their own learning materials, an approach that has pedagogical value as well as reducing programme costs. Experience gained over the years in developing low cost teaching aids and equipment using locally available materials could be shared between countries and utilized more widely.¹³

Some provision for continued learning is an important part of any comprehensive basic education programme for rural areas. Rural libraries (fixed or mobile), rural newspapers, literature in local languages, rural radio broadcasts, etc. – can all contribute to creating and maintaining a literate environment that encourages and supports lifelong learning.

2.2.5 Educational facilities

Educational facilities, i.e. the buildings and grounds, are an important factor in shaping the learning environment. A well maintained building, suited to the climate, with attractive, well furnished classrooms and good ventilation and lighting, facilitates the teaching-learning process. Safe drinking water, separate toilets for girls and boys and electricity should become normal features of rural schools and other learning centres. The playground and school garden also serve for learning activities. All of these features of a good learning environment (with the possible exception of the supply of electricity) should be manageable in most rural communities. Careful consultation with local leaders and parents, possibly together with some form of incentive (e.g. food for work), can lead to the school being ‘owned’ and managed by the local community.

The ‘child-friendly’ school defined at the World Education Forum encompasses these and other desirable characteristics, as sketched in *Box 26* below.

13. Many field offices of UNESCO and UNICEF can provide examples and documentation in this regard.

Box 26. The child-friendly school

The first requirement of a child-friendly school is that the physical plant and infrastructure be in good repair, with adequate space and furniture for each child, adequate lighting and a general appearance that is bright, welcoming and happy. Providing sanitary washrooms and locating schools close to pupils' homes is important, especially for girls.

In addition to regular teaching programmes, child-friendly schools offer counselling, health and nutrition services as well as opportunities to participate in extra-curricular activities such as sports and clubs. Special policies, such as affirmative action programmes, are needed to address the needs of particular groups of students, such as indigenous peoples or those with special physical or learning needs. In many countries, particularly in parts of South Asia and sub-Saharan Africa, special policies aimed at attracting and retaining girls are needed.

Finally, child-friendly schools use curricula and textbooks that respect local languages, cultures and cognitive styles, and their pedagogical methods are learner-centred rather than teacher-centred.

Source: UNESCO, 2000*d*.

2.2.6 Information and communication technologies (ICTs)

Information and communication technologies (ICTs), especially radio, are being used in several countries to support schooling and adult basic education programmes in rural areas. However, their potential is still largely untapped. The efficacy of radio as a support for in-service teacher training is generally acknowledged, but its use in the classroom or adult learning centre can be problematic (e.g. scheduling of broadcasts, interference with reception, supplying batteries for transistor radios). Televised broadcasts are used more rarely to reach rural learners (one example is the Mothers' Training Programme in Turkey, mentioned in *section 3.1.3*). Audio and video cassettes are more readily utilized and have certain advantages, such as local scheduling, possible interruption and immediate playback for understanding, etc. The use of these technologies in *basic* education needs to be moderated by a teacher for best results. In spite of their merits and potential, the contribution of ITCs on achieving EFA goals still remains to be assessed. Cost-effectiveness is one of the issues that need to be better captured.

2.2.7 Assessing learning achievement

Assessing learning achievement at given intervals can help both the teacher and the learner to measure progress in the learning process. When properly done in a non-threatening manner, tests can be an effective pedagogical tool, encouraging learners to make their best effort. Test results also help supervisors and administrators to detect weaknesses in the curriculum or in teaching or in other inputs and to take corrective measures as needed. While simple classroom assessments of learning should be part of each teacher's toolkit, more complex standardized testing requires a technical and administrative capacity that is deficient in many developing countries. Both standardized testing and continuous assessment of learning are especially problematic in rural areas due to logistical difficulties and the usually deficient training of rural teachers. The next section, which deals with general management issues, will discuss ways to deal with this problem.

3. Planning and managing improvements to basic education in rural areas

From the discussion and examples in the preceding section, it is evident that significant efforts are being made to find ways to expand and improve the provision of basic education in rural areas. What then are the important lessons and guidelines that can help policy-makers, planners, administrators and their various domestic and international partners to make basic education more effective in promoting rural development and reducing rural poverty? The main points that follow are not new: many have been advocated since the 1970s in one form or another and some are being applied more widely than others.

3.1 *Planning basic education for rural development*

3.1.1 Monitoring basic education activities

Monitoring basic education activities in rural areas is a prerequisite for planning and implementing reforms or improvements. Basic statistics on the school-age population, enrolments, attendance, completion and promotion are essential for good management of the school system, but are often incomplete and flawed for rural areas. These and other quantitative and qualitative data, broken down by gender, community, type of schooling,

administrative area and other appropriate categories, are useful in detecting disparities and malfunctions that require corrective action. Analysis of these data can reveal urban/rural disparities, but also the differences and diversity among rural areas that are needed for planning and management decisions at sub-national level. The results of such analyses, if properly utilized, can inform policy decisions that affect the allocation and use of resources for basic education in rural areas.

As seen earlier, standardized testing of learning achievement can provide important information on the performance of schools. Senior managers of the school system may use test results as one criterion in determining the allocation of human and material resources. With equity in educational opportunity now a key policy objective, disparities in test results that favour urban areas should incite compensatory investments in rural schooling. The experience of Chile (see *Box 27* below) shows how assessment results can be used for management decisions and also to motivate various actors to improve performance.

**Box 27. A push for education quality:
measuring outcomes and providing incentives – Chile**

Chile is making a concerted effort to improve the quality of education. The key measures mark a shift in its education policies from a focus on inputs to a concern with outcomes:

- *National evaluation.* A comprehensive standardized testing system (SIMCE) – assesses Spanish and mathematics skills every two years for students in grades 4 and 8 and monitors schools' progress in improving outcomes.
- *Positive discrimination.* A government programme known as the P900 Programme targets assistance – from new textbooks and materials to professional support for teachers – to the 900 poorest primary schools.
- *Rewards.* A national system of performance evaluation for government-funded schools (SNED) – provides bonuses to all teachers in a school on the basis of student outcomes.

Made widely available and published in national newspapers, the SIMCE testing results have several uses:

- Policy-makers use the results to compare school performance nationally and identify schools needing special help.
- Schools use good results to market themselves and attract more students.

- Parents use the results to help them select the best school for their children.

SIMCE data are also used to assess the pace of progress among children attending the schools in the P900 Programme. Schools improving their results enough to 'graduate' become part of the mainstream reform efforts for primary school and are replaced in the programme by other schools.

SNED has established competition between schools roughly comparable in student population and socio-economic levels. Around 31,000 teachers received bonuses in each of the first two rounds of SNED awards.

Many parents, teachers and school administrators believe that this system of external standards and evaluation provides a good yardstick for measuring schools' performance. Others think that SIMCE is unfair, especially to schools and students in poor neighbourhoods. Despite the controversy, Chile is clearly moving towards a more quality-oriented education system.

Source: UNDP, 2001 (Box 4.4).

In situations where the reporting of statistics and test results for rural schools is not yet systematic or reliable, sample surveys may be an affordable option to obtain useful information both on school and classroom conditions and on learning achievement. Three international initiatives, for example, have assisted many low-income countries to design and carry out such sample surveys. The Monitoring Learning Achievement (MLA) project supported by UNESCO and UNICEF has trained national staff and generated useful information in 72 countries in Africa, Asia, the Arab States and south-eastern Europe. The *Laboratorio latinoamericano de evaluación de la calidad de la educación*, based at UNESCO's Santiago office, works with sixteen countries in the region and the Southern Africa Consortium for Monitoring Educational Quality (SACMEQ), based at UNESCO's Harare office, is a joint undertaking of 15 national ministries of education. (Tables 2, 3, 4, 6, 7 and 8 present data from those sample surveys.)

Monitoring *non-formal* education activities in rural areas is particularly problematic, especially those activities operated by NGOs and local community associations. Where government provides funding or other support, providers can be required to file periodic reports including data items, such as numbers of beneficiaries by age and gender, that are

useful for planning and management purposes. Another option is conducting sample surveys to obtain illustrative data on the nature, scope, organization and outcomes of non-formal basic education activities in selected rural areas.

3.1.2 Eliminating urban/rural disparities

Eliminating urban/rural disparities in basic education requires comprehensive planning within the overall education and training system, so that basic education in rural areas can offer relevant learning opportunities equivalent in quality to those accessible in urban areas. Its formal and non-formal components should be designed and managed to be complementary and, insofar as possible, they should be integrated with other rural development initiatives (e.g. to improve health, food security, agricultural production, protection of the environment, local autonomy, access to credit, etc.).

Mechanisms for periodic consultation and joint planning among key actors should help achieve this harmonization. School mapping, for example, should take into account the analyses and plans of various rural development specialists, who in turn could be called upon to help with the in-service training of education personnel employed in formal and non-formal programmes in rural areas. Conversely, rural extension workers could be sensitized to identify unmet basic learning needs and to dialogue with teachers and administrators of education and training activities. Further synergies can be fostered at community level by using the school as a centre for social activities relating to rural development (Moulton, 2001).

The development of basic education in rural areas needs to be planned and carried out in a long-term and systemic perspective. Shifts in policy and approaches should be minimal in order to establish and retain essential coherence in the provision of basic education services. A study in Senegal, for example, concluded that “a lack of coherence in the strategies” had been a major shortcoming in the development of basic education in rural areas since independence (Balizet, 2001). Innovations are usually introduced tentatively in a limited area, with exceptionally high levels of resources (often donor supplied and driven). This experimentation with innovations is prudent and useful, but few ‘successes’ are then widely replicated or expanded to scale, incorporated into the national education and training system or even continued beyond the experimental period.

Obviously, more thought and commitment should be given to going to scale with successful innovations and putting them on a firm and sustainable basis.

Eliminating disparities does not imply homogenization of the teaching-learning process nor of its specific content. As seen in earlier sections, there is great diversity in rural areas, both in local situations (economy, language, customs, values) and in the basic learning needs of various groups of learners. Some mix of common subject matter set at the national level with locally determined elements can improve a programme's relevance and attractiveness to rural learners. Likewise, teaching aids and methods adapted to the local community and making use of available resources can enhance the learning process. Local conditions may require also flexibility in the school (or programme) calendar, class hours and the language of instruction. Many non-formal education programmes already demonstrate such adaptability to conditions in rural areas.

Involving local communities in the planning and implementation processes can more easily achieve such diversity in the provision of basic education. On this point, one analysis recommends "...a bottom-up planning process through which rural communities express themselves and their views are consolidated and co-ordinated at the local/district government level. These then need to be compiled and collated across districts, regions, states/provinces and finally at the national level. Such an approach would reflect on-ground realities and allow a network to be built in which local, regional and national perspectives would be reconciled" (INRULED, 2001).

3.1.3 Targeting funding where it is most needed

Targeting funding where it is most needed is clearly essential, but often difficult to do because of bureaucratic constraints and vested interests. Even when targeting is politically feasible, as in Chile's P900 Programme (see *Box 25*), funds allocated to targeted rural schools or groups draw down the general funding available for other rural schools and groups, which can generate opposition due to perceived inequities (Moulton, 2001). Pushing such choices to lower levels by decentralizing responsibility for basic education may make funding decisions more sensitive to local needs, but it may also open the door for abuses that would be more difficult to conceal at higher administrative levels. Another controversial measure

deserves mention here. Appropriate funding schemes might be devised both to raise additional local resources and to give priority to schools or communities most in need, for example by using coefficients related to low school enrolment or survival rates, adult illiteracy rates, or other indicators of need. Formula funding has been used in many school systems to determine resource allocations. The physical location of the school is sometimes taken into consideration to provide extra resources – staff or budget – to isolated schools (Ross and Levacic, 1999).

Within the state budget for primary schooling, some rethinking of allocations could help rectify current urban/rural disparities. For example, incentives in the form of salary differentials, subsidized housing, food and transportation allowances and opportunities for professional advancement could be introduced to make rural teaching assignments more attractive. Funding for the training and support of rural school principals can be an investment in making schools more effective (Moulton, 2001). Providing modest discretionary funds for rural schools to use to improve the learning environment, as tried out in India, can help raise standards and morale. More investment in providing teaching aids and learning materials to rural schools would certainly produce good returns in learning achievement and completion rates.

Other forms of basic education need to be considered too, in targeting funding to meet the most urgent needs. A strong case can be made for greatly increased funding for ECD programmes in rural areas. Because of the vital importance of a child's early years, both for survival and healthy development, funding for well managed ECD programmes should be considered a strategic investment with a very high return for the individual and for society.

In communities where formal schooling is not yet feasible or where there is a pool of out-of-school children and illiterate adolescents and adults, non-formal basic education programmes are the obvious alternative. They also offer some potential cost advantages, as explained some 30 years ago by Coombs and Ahmed:

“The inherent flexibility and unconventionality of non-formal education – its freedom to be different, to improvise and to adapt to an endless variety of circumstances and opportunities – give it many potential cost advantages over formal education. But these advantages

do not arise automatically; they must be continually sought out and exploited.” (Coombs and Ahmed, 1974)

Since that analysis, the use of modern information and communications technologies in non-formal (and formal) education programmes has become more widespread, although their potential has not yet been heavily exploited in rural areas. As seen earlier, radio and audio- and videocassettes have proved effective educational media in several rural situations (e.g. nomads, isolated groups) and thus offer an investment possibility that can sometimes be a cost-effective means to reach certain disadvantaged groups. When considering the targeting or allocation of funding, one must beware of thinking in either/or terms. All target groups need attention. All forms of basic education need resources. The issue is really to find a viable and effective dosage that works for equity and contributes to rural development.

3.2 Co-operation and partnerships at the national and international levels¹⁴

3.2.1 Close co-operation among the providers of basic education

Close co-operation among the providers of basic education is a prerequisite for making meaningful progress in rural areas. Many actors are involved, both governmental (e.g. ministries of education, agriculture, rural development, health, etc.) and non-governmental, operating at various levels, from national to local.

Also, as discussed in the preceding section, basic education comprises diverse activities serving (or not serving) a variety of rural constituencies and categories of learners. To organize and direct these various currents in support of rural development requires a flexible but determined effort by government and its partners.

3.2.2 Promoting community ownership of basic education programmes

Promoting community ownership of basic education programmes helps ensure their relevance, sustainability and effectiveness both in terms of learning achievement and of contributing to other rural development

14. See *Chapter 6* for a discussion of co-operation with external partners.

objectives. Involving local communities in the planning process is a first step and this needs to be done in an open, inclusive way so that all interest groups can express their views and any potential opposition is removed or at least identified. In view of the various obstacles to basic education discussed earlier, achieving community ownership can often be a very delicate matter, which may require determined and patient negotiation skills by education providers. A further complication is due to the fact that conflicts of interest among groups exist in most communities. In some instances government has a role to play in balancing individuals' rights and community responsibility.

Consequently, any decentralization of responsibility for basic education needs to be worked out carefully to guard against possible domination and discrimination at local levels. The Community Learning Centres (see *Box 28* below) operating in the Asia and Pacific region exemplify a particularly flexible approach to providing non-formal education opportunities that depend largely on local initiative and resources.

Box 28. Community Learning Centres in Asia and Pacific

The Community Learning Centres (CLC) project was initiated in 1995 by the Asia-Pacific Programme of Education for All (APPEAL), based at UNESCO's Bangkok office. CLCs are currently operating in 18 countries across the Asia and Pacific Region: Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Iran, Lao PDR, Malaysia, Myanmar, Mongolia, Nepal, Pakistan, Papua New Guinea, Philippines, Thailand, Uzbekistan and Vietnam.

Because of the widely differing conditions and characteristics of these countries, there is considerable variety in the activities carried out by the CLCs. However, the main focus in all countries is to facilitate learning that can enhance the quality of life of the community and serve common interests decided by community members. Core CLC activities are closely linked to the local economy and living conditions, the skills the people already have and the potential of the locality for socio-economic transformation. The needs, interests and aspirations of the people and the resources that can be mobilized are identified through participatory exercises that ensure the CLC activities gain acceptance by the community.

Three broad strands of CLC activities are discernible across the region. In a first set of countries, with relatively low literacy rates and slow economic

growth, such as Bhutan and Bangladesh, the centres focus on basic literacy and post-literacy activities along with some vocational training. A second set includes countries in East and Southeast Asia with relatively high literacy levels and that are newly industrialized. Their focus is mainly on activities related to income generation, employment and entrepreneurship. A third set includes those countries, mainly in Central Asia, with high literacy levels and that are in the process of transformation to a market economy and liberal democracy. CLCs in these countries focus on developing skills people need to adjust to the changing framework of economic activities and communication patterns.

In some countries, CLCs function directly under the education ministry, while in several others they have been set up with the assistance of an NGO. In a few countries, such as India, there have been informal attempts to link the management of the CLCs with democratically elected local bodies. Given the diversity of learning needs, the centres seek to establish linkages with all relevant local institutions concerned with agriculture, health, fisheries, education, etc. In Gansu Province of China, for instance, project managers try to make full use of local schools as CLC sites with the teachers, together with other local professionals, working as part-time tutors for farmers. Conversely, the Dhaka Ahsania Mission, an NGO in Bangladesh, has tried to bring together CLCs and local primary schools by extending the CLC facilities to teachers and pupils and by involving the teachers in the management of the centres. Such co-operation helps optimize the use of resources and fosters the sustainability of the centres.

The CLC project has set in motion new initiatives to provide learning opportunities to people hitherto unreached and to empower them to transform their own lives. The main strength of the CLC effort lies in its flexibility and openness. The sustainability of the CLCs will depend very much on how the education establishment views these initiatives and allows for their incorporation into national policies and programmes. Scaling up from the pilot stage has begun in a few countries like Vietnam, where the programme has expanded from six pilot centres to 155 CLCs in 36 of the 61 provinces.

Source: Information from APPEAL website: <http://www.unescobkk.org/education/appeal/clc/synth.htm>.

A reasonable balance must be found between government support and supervision on one hand and community ownership on the other. Ownership often entailed allocation of resources by the community, but these resources should be additional and not seen as a substitute for government funding and other support. In fact, communities in neglected

rural areas of many low-income countries have taken the initiative to create their own schools. While admirable in itself, this kind of local ownership can pose a dilemma in terms of equity and in relation to the right to education:

“...national school systems should distribute resources equitably to all schools, rural and urban. As long as poor rural communities finance their own schools, government resources to education are inequitably allocated to urban schools, where, ironically, families can probably afford to pay more. If the ministry builds and furnishes a school in the [rural] community, parents may stop paying as much, but they may also lose control” (Moulton, 2001).

Since basic education is a public good, no one should be excluded because fees or other costs cannot be met.

Community ownership can be enhanced also by involving local secular and religious leaders, if not as direct participants (e.g. in adult literacy classes), then as sponsors or members of the local education council. Similarly, linking basic education programmes, especially those for adults, to local social institutions and groups (e.g. temples, mosques, churches, women's associations) can draw support from existing loyalties and help ensure the programmes' sustainability (Lauglo, 2001). Programme or school oversight committees and parent-teacher associations are other ways of involving community members in the management of basic education programmes.

Yet another way to enhance local ownership and control of schools is through the clustering of schools that encourage peer exchange of experience and information and some sharing of resources. In Uganda, for instance, 'core' schools are linked to 'outreach' schools (Moulton, 2001). China offers another example with its 'twinning' arrangements that link schools in the developed coastal areas with schools in the poorer areas in the west of the country. Since 1992, some 1,400 schools have been involved and nearly 16,000 primary and secondary teachers have been trained in western areas through this scheme (INRULED, 2001).

Finally, good relations between the school or other education programme and the local community are both a necessary condition for a sense of ownership and its outcome. Consequently, school and programme

managers as well as teachers (who are often ‘outsiders’) can help establish constructive relations with the community by being sensitive to the needs and aspirations of all groups comprising it.

3.2.3 Government should normally take the lead at the national level

Government should normally take the lead at the national level, co-ordinating the efforts of its departments and those of various other stakeholders, initiating action when necessary and ensuring that due attention is given to important principles such as equity and policy goals such as poverty alleviation. In some countries, existing Education for All co-ordinating bodies might serve this purpose, provided that they include the ministries and other key actors concerned with rural development.

Co-ordination of efforts should, in principle, be easier to arrange at local levels and should produce evident synergies on the ground, but this is still more the exception than the rule. A study commissioned by the Club du Sahel and undertaken in five west African countries highlights the ‘great divorce’ that exists between education systems on one side and development programmes and services on the other, which constitutes a major obstacle to promoting rural development on the ground. The study found that educators, (formal and non-formal programmes) understood poorly or not at all the socio-economic issues at stake in the regions where they work nor did they seek ways to adapt their programmes to equip learners to take charge of new responsibilities. Rural development services, for their part, only rarely grasped the pedagogical dimension of their mission (Easton et al., 1998).

A recent study prepared for the World Bank offers several recommendations how rural development specialists can help educators improve rural schools:

- Help educators ... analyze the rural space, both the physical and social/cultural environment so that ... rural education projects take the particular rural environment into account in project design and implementation.
- Collaborate in the preparation of ... planning documents ... [using the Community-Driven Development process] to consider improvements in primary schooling in plans for developing and sustaining the rural space.

- Make available to schools people and other resources for teaching children about their rural environment, agricultural skills and other practical skills and knowledge that complement the academic curriculum.
- Partner on straightforward, well-defined interventions, such as mounting solar-power panels on schools or providing well-water to schools.
- Encourage communities to use the school as a centre for education and social activities beyond primary school.
- Collaborate to train extension agents and primary school teachers to listen and respond to expressions of needs and problems outside of their own professional setting [so that] ... both can deal with the broader rural space.
- Promote political support. Rural development and education specialists might pilot activities that foster local political support for a wide array of development activities, including school improvements ... (Moulton, 2001).

3.2.4 Non-governmental organizations and community associations constitute another set of important actors

Non-governmental organizations and community associations constitute another set of important actors in providing basic education opportunities in rural areas. They are often the only providers of non-formal basic education in rural communities and many operate with little or no government support (or supervision). They are particularly effective in developing grassroots projects, and several NGOs have demonstrated a capacity to carry out large-scale programmes, such as BRAC's 34,000 non-formal schools in Bangladesh (see *Box 3*). Some NGOs have generated innovative approaches that have been replicated widely, e.g. REFLECT (see *Box 10*), while others have had significant influence on public policy regarding literacy and other non-formal basic education programmes.

The initiative, flexibility, dedication and resources NGOs bring to rural areas often make a significant contribution to basic education and to rural development. In many remote rural areas, NGOs are the only providers of public services, including education. The training of NGO personnel, the monitoring and evaluation of NGO programmes, and the planning for replicability and scaling up, or, in other words, the sustainability of NGO programmes need special attention and support.

The actual and potential contribution of NGOs make them valuable actors in rural areas that can be brought into a sound working partnership with government and other actors. This is essential for any major expansion of non-formal basic education programmes for adolescents and adults. Even with the more limited objective of making current basic education programmes in rural areas more efficient and effective, NGO activities could be related to and harmonized with other components of the education and training system. One approach is for government to out-source non-formal basic education activities under some contractual arrangement as, for example, in Morocco (see *Box 8*) and Senegal (see *Box 12*). Another is to associate NGO representatives in the planning and management of a country's non-formal education programmes, as India did in 1998 when it set up its National Literacy Mission, which has NGO participation at all levels of the Mission's elaborate support structure.

3.2.5 In the low-income countries, private sector involvement in education is most evident, if at all, in the number of private schools, which varies widely among countries

In the low-income countries, private sector involvement in education is most evident, if at all, in the number of private schools, which varies widely among countries. Many private schools are managed by religious organizations and may have a particular religious agenda as well as offering the state determined curriculum. Other private schools are run on a for-profit basis and have higher costs (and often higher standards) than the public schools. A recent survey in India found that "private schools have become a flourishing business, even in rural areas". This was attributed to "(i) the breakdown of government schools, and (ii) the rise in the ability to pay of the parents" (Reddy, 2001). Curiously, private schools were found to be more prevalent in 'backward areas' than in more developed areas. The proportion of pupils attending private schools varied between 10 per cent and nearly 30 per cent across five of India's states. Apart from running schools as a business, private enterprises can collaborate with government to support rural schools. One example is Colombia's Escuela Nueva (see *Box 25*), a rural partnership between education authorities at the national, regional and local levels, the Federation of Coffee Producers, and local development and social organizations (UNESCO, 2000d).

Although there are important public policy issues concerning private sector involvement in schooling (e.g. equity, standards, certification, public funding, etc.), the private sector cannot be overlooked as an actual or potential partner in expanding and improving the provision of schooling in rural areas.

However, the private sector is generally much less involved in non-formal basic education. Some small rural enterprises do provide facilities or material support for literacy and non-formal vocational training programmes. A few enlightened employers realize that literacy and numeracy skills can improve the performance, health and safety of their workers, and are willing to support or even organize literacy programmes for them. South Africa, for example, has recently developed an Adult Basic Education and Training (ABET) programme that encourages employers, including government agencies, to support or offer ABET activities (Lauglo, 2001). Such promising, but scarce examples, suggest that the private sector constitutes an important potential partner that needs to be encouraged, perhaps through tax incentives or other inducements, to join in developing non-formal basic education opportunities in rural areas.

3.2.6 Within the education sector itself, one of the less mobilized resources for basic education is at the top of the pyramid, the higher education institutions

Within the education sector itself, one of the less mobilized resources for basic education is at the top of the pyramid, the higher education institutions. Apart from a coterie of university-based education specialists who undertake useful research and education ministry assignments, the institutions themselves, with few exceptions other than agriculture institutions, have made rather modest contributions, if any, to the expansion of educational opportunities in rural areas. Some may argue that this is not their mission or that they have barely sufficient resources to carry out their principal function. Yet in many developing countries higher education institutions continue to receive much greater per capita funding from the public purse than primary or secondary education (despite some adjustments during the 1990s) and generally do not serve the poorer population groups. So there appear to be ethical as well as pragmatic grounds for a counter-argument that surely some of the intellectual resources of tertiary institutions could focus on improving the education system, including basic education

in rural areas. *Box 29* below describes the contribution being made by one Chinese university in this regard.

Box 29. A university working with farmers – China

During the 1990s, the Chinese Government encouraged higher education institutions to contribute to education reform and economic development in rural areas. The Agricultural University of Hebei (AUH) took up the challenge and focused its efforts in the Taihang Mountain Area. Fifteen multidisciplinary teams of teachers, technicians and students undertook research and surveys in subject areas such as veterinary medicine, botany, forestry, energy resources, water conservation, etc. The results provided a sound basis for planning the development of the region.

As farmers are innately risk-averse, the AUH teachers organized field demonstrations and evening classes to disseminate knowledge and skills relating to techniques requiring less investment, but yielding better and quicker results. This helped farmers to increase their income and motivated them to learn new agricultural practices. Some of the better educated farmers agreed to serve as models to demonstrate new techniques in crop cultivation and livestock rearing.

During the summer and winter vacations, some 200 student volunteers went to eight very poor counties to participate in literacy and technical training of farmers. Through the one-help-one activities, in which one student taught one farmer or one team of students worked in one village, the students enriched their own understanding of rural development while disseminating appropriate techniques and teaching literacy to poor villagers.

Source: INRULED, 2001.

4. Concluding remarks

Meeting the basic learning needs of rural people in the developing countries is clearly a major challenge to achieving Education for All. It is also now recognized to be a prerequisite for rural transformation and the general improvement of rural life. Consequently, the provision of basic education in rural areas requires and merits far more attention, effort and resources than it presently receives. This contribution has attempted to explore the main aspects of this challenge and also to review some of the recent and on-going initiatives that could help show the way forward.

While the education authorities in each country have the primary responsibility for managing the education system, the active co-operation of numerous partners inside and outside government is necessary to expand and improve the range of basic education opportunities on the scale needed in rural areas. This effort obviously calls for strong and continuous support at the political level, while action needs to take place in each and every rural community. Many experiences suggest that the local community is an essential partner in defining the basic learning needs of its members and in establishing and maintaining basic education programmes and activities in rural areas. Rural communities often can offer significant human, material and intellectual resources. Once these resources are mobilized and given adequate support and direction, rural communities and their members can become both beneficiaries and important actors in the provision of basic education and in the transformation of the rural space.

References

- Ahmed, M. et al. 1991. *Basic education and national development; lessons from China and India*. New York, UNICEF.
- Ahmed, M.; Chabbott, C.; Joshi, A.; Pande, R. 1993. *Primary education for all: learning from the BRAC experience – a case study*. Washington DC: ABEL/USAID; Rockefeller Foundation; UNICEF.
- Atchoarena, D. 1999. *Researching literacy; programmes for young adults (Burkina Faso, Guinea, Mali)*. Paris: IIEP-UNESCO.
- Balizet, DI. 2001. *Étude sur la formation et développement rural au Sénégal: état des lieux et perspectives*. Centre Africain d'études supérieures en gestion (mimeo). IIEP-UNESCO.
- Bellamy, C. 2001. *The state of the world's children 2001*. New York, UNICEF.
- Carm, E.; Berryman, L.N. 2001. *Distance basic education in Lao P.D.R.* Final project evaluation of UNESCO project 504/LAO/12. Paris: UNESCO.
- Carr-Hill, R; Peart, E. 2002. *Study on education for nomads and pastoralists in Eastern Africa* (draft). Paris: IIEP-UNESCO.
- Carron, G.; Châu, T.N. 1996. *The quality of primary schools in different development contexts*. Paris: IIEP-UNESCO.
- Casassus, J. et al. 2000. *Primer estudio internacional comparativo sobre lenguaje, matemática y factores asociados, para alumnos del tercer y cuarto grado de la educación básica. Segundo informe*. Santiago, Chile: UNESCO.
- Center for Public Opinion Studies and Forecasts. 2001. *Monitoring learning achievements: National survey of primary education quality*. Bishkek: Kyrgyzstan Ministry of Education and Culture.
- Emiliani, M.; Gasperini, L. 2002. *Compendium of experiences of Italian NGOs in basic education* (draft). Rome: FAO.
- Coombs, P.H.; Ahmed, M. 1974. *Attacking rural poverty, how non-formal education can help*. Washington DC: World Bank.
- De Haan, A.; Lipton, M. 1999. Poverty in emerging Asia: progress, setbacks, and log-jams, *Asian Development Review*, 16(2), 135-76.

- Easton, P. (Ed.), et al. 1998. *Décentralisation, autonomisation et construction des capacités locales au Sahel. Résultats de l'étude PADLOS-Education*. Paris: Club du Sahel/OECD; CILSS.
- El Bouazzaoui, H. 2001. *Initiatives destinées aux enfants et jeunes exclus de l'école formelle*. Communication au Premier Séminaire National : Education Non Formelle : Bilan et Perspectives, Royaume du Maroc, Ministère de l'Éducation nationale, Rabat, 26 and 27 February 2001.
- FAO (United Nations Food and Agriculture Organization). 2001. *A compendium of FAO's experience in basic education: all for education and food for all*. Rome: FAO (also available at: www.fao.org/sd/index_en.htm).
- FAO. 2002. *The state of food and agriculture, 2002*. Rome: FAO.
- FAO; Regional Office for Asia and the Pacific. 2002. *Case study on education opportunities for hill tribes in northern Thailand: implications for sustainable rural development*. Bangkok: FAO.
- Gasperini, L.; Maguire, C. 2001. *Targeting the rural poor: the role of education and training*. Rome: FAO.
- Gasperini, L. 2000. *The Cuban education system: lessons and dilemmas*. Washington DC: World Bank.
- Govinda, R; Varghese, N.V. 1993. *Quality of primary schooling in India: a case study of Madhya Pradesh*. Paris: IIEP-UNESCO.
- IFAD (International Fund for Agricultural Development). 2001. *Rural Poverty Report 2001*. Rome: IFAD.
- INRULED (International Research and Training Centre for Rural Education). 2001. *Education for rural transformation: towards a policy framework*. Beijing: INRULED/UNESCO.
- Janke, C. 2001. *Food and Education: background considerations for policy and programming*. Catholic Relief Services.
- Lauglo, J. 2001. *Engaging with adults. The case for increased support to adult basic education in sub-Saharan Africa*. Washington DC: World Bank.
- Ma Peifang. 2001. *Education for agricultural, rural development and food security in China (draft)*. Bangkok: FAO.
- Moulton, J. 2001. *Improving education in rural areas: guidance for rural development specialists (draft)*. Washington DC: World Bank.

- Monitoring Learning Achievement (MLA) Project. 2002. *Urban/rural disparities* (mimeo). Paris: UNESCO.
- Morocco Ministry of Education. 2001. *L'école de la deuxième chance*. Rabat: Ministry of Education.
- Oxenham, J. et al. 2001. *Strengthening livelihoods with literacy* (draft). Bonn: German Adult Education Association.
- Reddy, B.S. 2001. *Education and rural development in rural India*. Paris: IIEP-UNESCO.
- Republic of Uzbekistan, Ministry of Public Education. 2000. *A survey on monitoring of learning achievements* (draft). Tashkent: Ministry of Public Education.
- Ross, K.N. (Ed.). 1998-2001. *The quality of education: some policy suggestions based on a survey of schools*. SACMEQ Policy Research series: reports No. 1 Mauritius, No. 2 Namibia, No. 3 Zimbabwe, No. 4 Zanzibar, No. 5 Zambia, No. 6 Kenya, No. 7 Malawi. Paris: IIEP-UNESCO.
- Ross, K.; Levacic, R. (Eds). 1999. *Needs-based resource allocation in education via formula funding of schools*. Paris: IIEP-UNESCO.
- Rugh, A.; Bossert, H. 1998. "Escuela Nueva in Colombia". In: *Involving communities: participation in the delivery of education programs*. Washington DC: ABEL/USAID.
- Sange Agency. 1999. *Monitoring learning achievements of primary school students in Kazakhstan*. Almaty: Government of Kazakhstan.
- Somtrakool, K. 2001. *The change from agriculture education to education for rural development and food security in Thailand* (draft). Bangkok: FAO.
- Sweetser, A. 1999. *Lessons from the BRAC Non-Formal Primary Education Program*. Washington DC: ABEL/USAID.
- UIS web site. uis.unesco.org.
- UNDP. 2001. *Human development report 2001*. New York: UNDP.
- UNESCO. 1995. *The children of the Nile*. Making it work, Innovations Series No. 9. Paris: UNESCO.
- UNESCO. 1997. *In the green desert*. Making it work, Innovations Series, No. 12. Paris: UNESCO.

- UNESCO. 1999. *Learning for life*. Innovations for Youth Series, No. 2. Paris: UNESCO.
- UNESCO. 2000a. *Statistical document*. World Education Forum, Dakar, 2000. Paris: UNESCO.
- UNESCO. 2000b. *Global synthesis*. World Education Forum, Dakar, 2000. Paris: UNESCO.
- UNESCO. 2000c. *Thematic studies*. World Education Forum, Dakar, 2000. Paris: UNESCO.
- UNESCO. 2000d. *Final report*. World Education Forum, Dakar, 2000. Paris: UNESCO.
- UNESCO. 2000e. *Dakar Framework for Action*. World Education Forum, Dakar, 2000. Paris: UNESCO.
- UNESCO. 2000f. *Meeting special/diverse education needs: making inclusive education a reality*. Issues paper for World Education Forum, Dakar, 2000. Paris: UNESCO.
- UNESCO. 2001a. *Making knowledge work*. Innovations for youth series, No. 5. Paris: UNESCO.
- UNESCO. 2001b. *Education in situations of emergency and crisis: challenges for the new century*. Thematic study for the World Education Forum, Dakar, 2000). Paris: UNESCO.
- UNESCO. 2002a. *Education today, No. 1*. Paris: UNESCO. Newsletter.
- UNESCO;WFP (World Food Programme). Undated. *Defeating hunger and ignorance. Food aid for the education of girls and women*. Paris: UNESCO.
- UNICEF. 2002. *The State of the world's children 2002*. New York: UNICEF.
- World education report*. 2000. Paris: UNESCO.
- World Food Programme. 2001a. *School feeding works for girls' education*. Rome: WFP.
- World Food Programme. 2001b. *School feeding baseline survey*. Rome: WFP.
- World Food Programme. Undated. *Girls on the front line: take-home rations for girls' education*. Rome: WFP.

- World Bank. 1999. *Gender, growth and poverty reduction*. Technical Paper No. 428. Washington DC: World Bank.
- World Bank, Basic Education Cluster. 2000a. *Effective schooling in rural Africa. Project report 1*. Washington DC: World Bank.
- World Bank. 2000b. *Effective schooling in rural Africa. Case study briefs*. Washington DC: World Bank.
- World Bank. 2000c. *Effective schooling in rural communities. Key topics*. Washington DC: World Bank.

Chapter III

Making learning relevant: principles and evidence from recent experiences

Peter Taylor (Part 1)

*Daniel Desmond, James Grieshop and Aarti Subramaniam
(Part 2)*

Introduction

Improving relevance is a major concern for basic education particularly when dealing with rural areas. While in many countries including agriculture as a component of primary school education has acquired a poor reputation, innovative approaches linking learning to students' environments seem to open new avenues both in developed and developing countries.

There has been a significant growth in interest in experiential education and project-based learning as educators recognize the value of hands-on learning. Reflecting this trend, garden-based learning is now a vibrant field of both educational theory and practice. Theoretical and methodological approaches to garden-based learning vary greatly across the educational landscape, however the application of the pedagogy falls principally under one of two frameworks: experiential education (in contemporary language frequently referred to as project-based learning) and/or environmental education.

The review of innovative approaches of teaching in rural areas shows that agriculture has in fact much to offer to basic education and primary schooling, but in ways which are quite different to traditional approaches. While garden-based learning seems to be better documented for developed countries, efforts to relate teaching to rural environments, including agriculture, appear as a global phenomenon. In developing countries, the approach is still often called school gardening. Sharing experiences might help to create new partnerships and overcome some of the bottlenecks faced in past experiences.

The first part of the chapter focuses experiences linking the different learning environments of the student in an effort to improve relevance and quality of learning. Examples of such educational initiatives, often called contextualization of learning, are reviewed and a number of key issues and lessons are examined. The analysis then considers specifically the potential of agriculture as a medium for contextualization of teaching and learning in rural primary schools and some implications for teachers, schools and communities and other stakeholders in basic education in rural areas. A particular application of contextualization is also considered in addressing the sensitive and complex HIV/AIDS issue which represents a major threat in many rural areas, notably in sub-Saharan Africa. Exploring health issues within the local context can be a very effective approach and there are a number of examples of projects and programmes relating to environment, health and literacy which also draw on a contextualized approach. Hence, although the main focus is agriculture, some interesting lessons are being learned from interventions which aim to contextualize learning within the wider rural development sector.

The chapter then examines garden-based learning as a specific application of agriculture in the school environment. The merits of garden-based learning were already described in the work of many philosophers. Its implementation is well documented, in particular regarding Europe and the United States and illustrates how garden-based learning can have a positive impact on basic education. The chapter then reviews the contemporary movement of garden-based learning and identifies some of the results of the practice. This experience review is followed by a discussion on emerging issues and future directions. Although the development of garden-based learning is described as a general trend, a distinction is made between developed and developing economies in order to provide a greater understanding of 'what works' and under what circumstances and to guide recommendations for practical action.

1. Using students' environment to enhance learning: experiences and findings

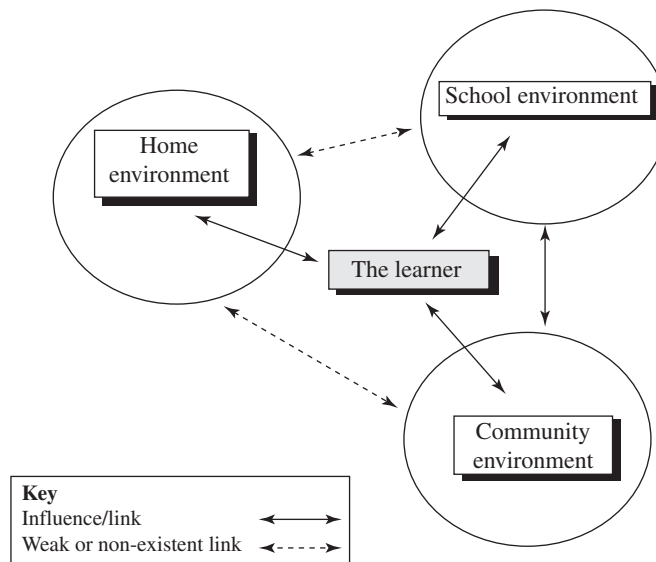
1.1 Introduction

Students' environment and experience, including agriculture, can be used as a means of enhancing the learning process and learning outcomes

through a what is sometimes called a ‘contextualized’ approach. Agriculture has been included as a component of primary school education in many countries, but it has acquired a poor reputation with many stakeholders in education. One major reason for this is the association of agriculture subjects and experience with unproductive labour and little educational value. This part of the book aims to demonstrate that agriculture has in fact much to offer to basic education and primary schooling in rural areas, but perhaps in ways which are quite different to traditional approaches.

Learning is much influenced by the relationship between three distinct environments; the home, the school and the community (Taylor and Mulhall, 1997). Many authors argue that the development of appropriate strategies for curriculum development and teaching and learning should be based on the immediate context in which the school is located (Graham-Brown, 1991; Agnihotri et al., 1994; Ravi and Rao, 1994; Lubben et al., 1995; Bude, 2000).

Figure 1. Linkages between school, home and community environments



This approach suggests that the content of education programmes, the methods by which learning is facilitated and the materials used to this end should be pertinent to the experience, culture and environment of the learners. In other words, teaching and learning should be contextualized. Taylor and Mulhall (1997, 2001) describe contextualization of learning occurring: *“when the content of the curriculum and the methods and materials associated with it are related directly to the experience and environment of the learner”*.

1.2 Experiences of contextualization

A review of the literature demonstrates that contextualized approaches are used and do work in many education initiatives in different countries, although it is still extremely rare to find interventions where contextualization of teaching and learning is the main focus (see one example from Swaziland in box below). Some examples are also given from a very wide range of projects in rural schools. These are selected on the basis that they contain elements of support to teaching and learning that could be described as contextualization. The information included is drawn from project documents and/or evaluation reports.

It is clear that contextualization of learning in rural schools is a strategy which has been attempted in various educational programmes, illustrated by those examples above where an effort has been made to relate the content of the curriculum to the local environment. A number of difficulties are shown to be associated with this, including the constraints placed upon teachers by workload, general conditions and lack of experience as well as the driving force of examination-oriented learning which acts against the introduction of more flexible approaches to teaching and learning. However, the potential benefits of contextualizing learning in rural schools are great, provided constraints are minimized and efforts are taken to build on what already exists, namely the reality of the local context.

Having looked rather generally at contextualization of learning, it is now necessary to return to the rural focus of this discussion and specifically to the case of agriculture. Since agriculture forms the reality for many rural dwellers around the world, the next section looks at a new role for agriculture in rural primary schools - a medium for the contextualization of teaching and learning and an opportunity to put into practice the great potential of this promising approach.

Table 1. Experiences of contextualization

Country	Main focus of intervention	Basis of contextualization	Key lessons learned
Sri Lanka	Development of an integrated approach to curriculum development (Peiris, 1976, Baker, 1989).	Children should carry out activities related to their own experience, using subject content as and when necessary in their work, through a project approach. 'Spiral', multi-grade curriculum provided guidance on time, place and human needs; teachers' handbook developed.	Guidelines were flexible, allowing teachers freedom to develop lesson plans and use local materials. But shortage of relevant materials hampered discovery learning.
India	Bombay School Improvement Programme, aiming to foster child-centred learning, by finding concrete ways of addressing children's learning difficulties, to reduce drop-out and increase community support and interest (Black et al., 1993).	Improving contacts between community and school; curriculum materials developed by teachers in addition to standard textbooks.	Parental fears about child-centred methods creating difficulties for children later in secondary schools. More resources required than normal, teachers need specialist training, children have to learn how to learn in interactive groups.
Uganda	Namutamba Basic Education Integrated into Rural Development (BEIRD) curriculum development project (Massey, 1987).	Infusion of agriculture and appropriate technology into curricula of teacher training colleges and primary schools, in order to increase range of life-relevant knowledge and skills for school leavers.	Organizational structure was needed at different levels (national, district, community), as well as inputs for teacher training and materials development.

Table 1. (continued)

Country	Main focus of intervention	Basis of contextualization	Key lessons learned
Cameroon	Primary school development in Anglophone Cameroon (Bude, 1985).	Using local environment for development of cognitive abilities and primary school as animation centre for community development.	Schools have forged strong linkages with their local communities as service providers of various products, including agricultural information.
Tanzania	Recognition and orientation of primary schooling as means of preparation for exit (Elstgeest, 1987).	Schools enabled to provide activities and methods which enhance growth of understanding by providing problems and asking questions linked to children's own experience.	Children learned that by manipulating the environment they can influence and control the response and behaviour of living things in certain ways, as in agriculture.
Kenya	Kisumu School Improvement Project aiming to increase relevance of school curriculum, reducing imbalances between supply and demand of educated manpower, addressing widening gaps between urban and rural standards and participation and increasing access of girls to education (Black et al., 1993).	Bottom-up development, appropriate teaching styles and strategies identified by teachers according to needs of children, and holistic, covering whole range of children's emotional, physical and cognitive needs. Some activities and themes (integrated topics) were agricultural.	Attitude and motivation of children (especially self-confidence) appeared to improve, increased attendance rates. Teachers found it difficult to move away from the official curriculum and project and group work was limited. Resource provision was high.

Table 1. (continued)

Country	Main focus of intervention	Basis of contextualization	Key lessons learned
Ethiopia	Development of the General Polytechnic Curriculum in 70 pilot schools during the Marxist era of National Government (cancelled following political change) (ICDR, 1993).	Environment and experience of pupils supposed to be integrated into all subject areas, for example, using agriculture examples to facilitate learning in mathematics.	Problems included difficulty in establishing a common language nationally, shortage of resources and trained teachers.
Brazil	Northeast Basic Education Project (EDURURAL) aiming to improve education in the least developed areas. (Harbison and Hanushek, 1992).	Support for curriculum development designed especially to meet the needs of a poor rural environment where drop-out, repetition and non-attendance were very high. Standard packages of incremental learning resources were distributed to many schools, to reduce wastage of resources by improving learning performance.	Wastage declined in EDURURAL schools, but promotion rates did not improve greatly, nor did the schools approach the effectiveness of schooling in urban areas.
Colombia	Escuela Nueva built upon the Unitary School programme, a flexible, rural, child-centred learning programme which was especially suited to working children who needed to learn at their own pace. In Escuela Nueva, curriculum reform took place at national level but leaving teachers room for local adjustment (Colclough and Lewin, 1993, Colbert et al, 1993).	The curriculum provided practical problem-solving experiences; the criterion for advancement was the ability to apply knowledge within the community. Linkages between school and local community were emphasized and the use of local materials was advocated. Relevance of rural education was of key importance.	Escuela Nueva students performed higher than non-project rural school children in performance tests and teachers participated more in community activities. Rural education did not approach the effectiveness and efficiency of urban schooling, however.

Table 1. (continued)

Country	Main focus of intervention	Basis of contextualization	Key lessons learned
Mali	The 'GreenCOM' programme worked in formal, non-formal and informal education sectors to promote environmental awareness and action and integrate environmental education into primary schools (Grieser, 1999).	Applied learning 'directly to the Malian world', community as extension of the classroom, participatory approaches in learning, strong emphasis on pedagogical training for teachers.	Orientation to Malian needs, and active, participatory learning in interesting and challenging situations effectively increased motivation and performance in boys, but less so in girls due to cultural factors.
China	Joint Innovative Project (JIP) on raising the achievement level of children in primary education, 2000 schools in six provinces, focusing on staff development, pre-school preparation of children, pedagogical training, community-based advocacy and mobilization (UNESCO, 2000).	Individual schools prioritize action areas for improving learning based on specific local conditions and develop strong linkages with community members and families. Curriculum now targeted to the needs of rural students and teachers trained to deliver it effectively, with local support.	Teachers encouraged to become researchers, to learn together with students and community members. Integrating learning environments eases passage of young children through the school system. Scaling up by clustering schools at different levels and cascading effects of training.

Box 1. Contextualization of science teaching – Swaziland

Lubben, Campbell and Dlamini (1995) carried out action research in Swaziland where a project facilitated the production of learning materials for two units in the junior secondary science syllabus. A cross-section of practising teachers was involved in the creation and trialling of the materials. The new 'Matsahpa Lessons' have a technological approach to science and are characterized by three aspects, contextualization, application and investigation. The contextualized approach means that science in schools is linked to everyday life and the experiences that students may have had or are likely to have.

The new materials were introduced to teachers through an in-service training programme, including a detailed workshop manual. An important feature of this initiative, is that the effectiveness of the programme has been evaluated longitudinally in terms of teacher adoption and implementation of the new teaching approach and in terms of student attainment and attitude. The process begins with an induction workshop for teachers and evidence shows that almost all teachers developed quickly a good grasp of the contextualized nature of the teaching approach.

Other key findings from this programme relevant to this paper show:

- Peer teaching is an effective way to facilitate the understanding and adoption of contextualization;
- Teachers who are innovators are most likely to take advantage of in-service and in-class support to enable them to apply a novel approach;
- Novel approaches are not easily applied by some teachers unless they receive additional support in the technical content area and in teaching methodology in general, to boost their confidence;
- The new approach is implemented more successfully when the focus is on improving students learning, rather than on teachers teaching;
- Student interest and participation is raised by introductions to lessons which are contextualized;
- Three categories of context appear to lead to success; contexts to which students relate but are not familiar with, contexts in which they have strong experience and contexts which are contentious or provocative, such as the difference between traditional culture and science;
- Boys and girls respond in a similar way to the contextualized lessons, although investigative work tends to be more popular with boys. The interest of girls in what might be termed boys' topics such as electricity is maintained when lessons are contextualized through role playing and story telling;
- Involvement in such a programme results in teachers undergoing considerable professional growth.

Box 2. The Social Forestry, Education and Participation (SFEP) pilot project – Thailand (1993-1996)

Purpose of SFEP

SFEP emerged in response to some of the problems besetting efforts to bring schools and communities closer together and also in an attempt to contextualize learning through involvement of primary school children in community-based activities, specifically in social forestry. SFEP intended to change teaching, learning and school-community relations by involving students in studies of local village problems related to forest management.

Project key elements

- Participation in the project was both a means and an end, in order to achieve sustainable forestry management;
- Transfer of technical expertise to community members was promoted through teacher-training in technical forestry and through materials development;
- Training of both teachers and community members;
- Linking what students learn in school to their family and community context;
- Students examined social and political structure of their community in relation to forests;
- Pilot schools were established to act as demonstration schools for scaling-up purposes;
- Main strategies used were ‘teacher as learner’ training sessions, project handbook/guide, teacher collaboration (teachers’ pairs in schools), supervision by ministry staff, information dissemination, incentives to reward teacher participation.

Process and outcomes

Fifth and sixth grade students were taken out of school and into their communities to study real world problems. Communities became laboratories for information gathering and their human and physical resources were used to enhance students’ understanding of concepts taught in class. As students applied what they had learned to their communities’ problems, the schools’ role underwent a transformation as well, fulfilling a second part of the SFEP which was to have schools contribute to community capacity to address local problems. A third result of the SFEP was that schools became more integrated into their communities and, by providing technical expertise, contributed knowledge vital to the development of local solutions. At the same time, students developed knowledge of important concepts, useful skills and

positive attitudes about themselves and their ability to influence community actors.

Main lessons learned

About communities:

- Strong latent support exists within communities for projects like the SFEP. Such support can be mobilized for changing the teaching and learning process and initiating community development projects;
- Villagers have much to contribute to the education of their youth;
- As communities become involved with schools, relations improve and community expectations for schools increase.

About schools:

- Students represent a powerful force for change within villages;
- Teacher change occurs incrementally and is directly related to student response and the support teachers receive;
- There is a need for ongoing teacher involvement in community projects;
- Principal (school director) leadership is important.

About staff development, training and external support:

- Ongoing staff development for teachers in technical content is important;
- There is a need to facilitate (or expedite) linkages to outside sources for technical expertise for teachers and villagers;
- Promoting changes in school-community relations requires that villagers be trained along with teachers and other educators.

About complexity, success and variation:

- Projects developed by schools and communities may have different overall project goals than a pilot project because the implementation process cannot be controlled;
- Definitions of success at the end of a project may vary from original criteria.

Source: McDonough and Wheeler, 1998.

1.3 *The role of agriculture in contextualizing teaching and learning in schools in rural areas.*

It is clear that agriculture can play a powerful role in the wider learning process in rural schools. An agricultural topic used as a medium for contextualizing part of the curriculum can provide an avenue through which children can have repeated experiences which help them to master cognitive, physical and social skills. Agriculture can be the basis of integrated projects incorporated in the school curriculum, with academic activities chosen for their locally relevant, experimental attributes. For example, the Department of Primary Education, Sri Lanka, advocates strongly the use of agricultural experience as a medium for contextualization and have maintained their emphasis on its importance in the recent national programme of curriculum development (Ministry of Education and Higher Education, 2000):

The success of the teaching-learning process depends heavily on the motivation of both the learner and the teacher. It has been identified that information regarding food habits and types of food of the community can be used in introducing innovative strategies in education. Outdoor activities using agricultural plots in the school and the home can also make learning more meaningful and hence attractive. These plots could be used for introducing concepts in mathematics, language and social studies, etc... Since agriculture is the main occupation of the parents in the Sinhala Medium areas, every attempt must be made to help them to learn better practices. Well maintained agricultural plots in the school could (...) also serve as demonstration plots for the community. In addition these could be used as nurseries to provide seeds and plants of improved varieties to farmers.

Even though the agricultural experience of individuals will differ, agriculture can still be used as a vehicle to make school learning more meaningful. Metaphors and analogies can be based on agricultural activities and experiences and thus enhance the acquisition of literacy, numeracy and the skills of basic scientific reasoning within the confines of a subject-based curriculum. Children may be encouraged to relate the learning process in school with the natural learning process which exists outside the classroom and begin to provide the means by which the process of learning becomes continuous, in school and beyond. At home, many pupils will be involved in daily agricultural practices such as feeding and herding livestock, watering, digging and weeding. Agricultural seasons may also

affect the pupils' school attendance record. This familiarity with agriculture may provide a basis for contextualizing learning over a range of subjects. It can enable children to develop not only basic knowledge and skills, but also higher-order competencies, such as problem-solving and thinking skills and broader competencies such as leadership skills, group skills and personal initiative. This is likely to enhance interest and thus motivation.

With the purpose of understanding more about these ideas in practice, Taylor and Mulhall (1997) aimed through their research study of four countries to discover the role of agricultural experience as a vehicle for contextualizing learning in a context where the needs of learners are extremely diverse and whose life experience had been enriched by agricultural practice. A second aim was to examine how agricultural experience could be used in rural primary schools to support the development of young rural learners' basic skills of literacy, numeracy and other life skills which are perceived as necessary for a fruitful and productive life. The research attempted to highlight the problems which might arise in attempting to use agricultural knowledge and experience in such an innovative way and to identify examples of good practice which would be of use to educational policy makers and practitioners. Some of the more general findings of this research have been discussed earlier in this paper, but there were a number of very interesting observations with direct relevance to the role of agriculture in contextualizing teaching and learning.

Where agriculture was the topic of a lesson, the pupils' experiences of their farming practices at home were frequently drawn upon. In several schools, pupils brought in agricultural materials such as plants, seeds or foodstuffs, which were then used by teachers to help explain abstract mathematical concepts. In interviews, both teachers and pupils indicated ways in which use of agricultural experience had assisted them in understanding some aspect of the curriculum. A teacher in Tanzania cited an example of teaching English to his pupils where he was attempting to explain the word 'bunch'. Pupils had difficulty grasping the meaning of this term until they were taken outside and shown a bunch of bananas on a tree. According to the teacher, "my teaching aids are outside ... it makes a picture and the pupils understand".

An Indian mathematics teacher described how he had taken pupils into the rice field opposite the school to illustrate to pupils how straight lines and angles were used in practice. Another teacher said that he could

refer to sheep in lessons on counting, as many of the pupils herded sheep. Where pupils were required to learn about wild animals, the starting point would be domestic animals with which all pupils were familiar. Some pupils did recount occasions on which they had discussed what they learned at school with their families. Using examples from a context familiar to parents relieved a certain embarrassment that arose when parents realized that they could not understand curriculum topics which were quite new to them. Many mothers of pupils in the case study schools had received very little formal schooling and yet it was with the mothers that many pupils interviewed clearly related most strongly. As a result of relating school learning to the agricultural context, a more supportive and understanding learning environment at home could be created. There were examples, too, of how schools reached out beyond their boundaries into the community. Pupils were sometimes taken by their teachers to the school garden or to neighbouring farms where they performed activities based on and related to subjects such as geography. Farming themes were often used as a basis for language teaching and discussions were sometimes based on the experience of a visit to a local farm or rural enterprise.

In Ethiopia and Sri Lanka, very practical, contextualized teaching approaches were observed. In one Sri Lankan school, pupils carried out practical activities in an experimental agricultural plot and these same activities were then used to help pupils learn mathematics concepts or to support English language teaching. In an Ethiopian school, pupils were also observed undertaking simple experiments using agricultural materials. Teachers stated that as a result of using the experimental plot, pupils' curiosity and questioning had increased, asking such questions as "How do we increase the yield of this crop?", "What new technologies can we use?"

This research showed that agriculture can be linked to different components of the curriculum, including science, reading and writing, geography, mathematics, social studies, food, nutrition and health. In many cases, especially where the curriculum is centrally produced and flexibility is limited, teachers can at least make linkages between prescribed subjects and the agricultural environment. Where there is greater flexibility, teachers may be able to integrate different components of the curriculum and apply a topic-oriented approach by identifying with their students a project which is based on an agricultural theme. This approach is already being articulated in the new Sri Lankan national primary school curriculum.

Box 3. Community kitchen gardening – Bhutan

Adopting a community level approach, kitchen gardens were established at local schools, integrating farm enterprises in the schools through intensive animal husbandry, horticulture and small-scale processing (FAO, 2001). These enterprises would generate income for the school and allow the community to contribute. Schoolteachers, agricultural extensionists, health workers, householders, students, support staff and volunteer farmers were trained in techniques of fruit and vegetable production, processing, preservation and consumption aimed at better nutrition. A well-implemented management system evolved from the very beginning between the teachers and parents in the programme. The kitchen garden programme was already being replicated in all blocks of the pilot districts by the end of the project. The community approach of this project helped to overcome some typical problems associated with school gardening, such as neglect of gardens in school holidays and the demand on teachers' and pupils' time in maintenance of the garden.

Box 4. School-based nutrition project – Kenya

An action research project on traditional vegetables recruited primary school pupils as co-researchers with community members (Ogoye-Ndegwa et al., in press). They explored the feasibility of increasing the intake of traditional vegetables through a school-based horticulture programme and aimed to increase pupils' competence as effective change agents by empowering them in culturally compatible ways. Following success of the project, new schools have become involved, with training of more teachers in the methodology. The relationship between teachers and pupils has shifted as pupils now feel confident to discuss ideas openly and participate more actively in learning. Some pupils were "looked on as knowledge holders and became instructors to pupils from other (and even higher) classes and guests from other schools". Usage of a diverse range of traditional nutritious vegetables has increased in the community.

Box 5. Improvement of school and family nutrition through integrated agroforestry systems – Panama

This programme aims to improve production and consumption of nutritious foods and to work within the schools to integrate agroforestry systems (fruit trees, quick growing plants for animal feeding, e.g. goats, domestic animals, environment components, gardens) (FAO, 2001). School centred demonstrative technical units were implemented in 13 pilot villages. Children from age 6-14 were targeted: One day workshops were given to students, teachers and parents. Only local resources were used, and no 'high-tech' equipment was involved. Many positive things have resulted from this project. Demonstration Units will serve as open schools. New fruits and grains were introduced into the gardens. New techniques of rice production and composting animal and vegetable waste were used by the farmers (one-third of whom were female). Workshops were given on horticulture, nutrition, food preparation, preservation and different uses of foods. Training components included food security, rural development and agroforestry. The project lasted two years and was originally meant for maintaining school gardens, but the production was so huge that, besides being used for school feeding and being distributed to the parents, produce was sold on the market. Funds were established by this income. The multisectorial approach of the project avoided duplication of human, economic and logistic resources and was based upon an integrated approach to resolve various human needs. The participatory rural appraisal allowed the population to express their needs, their problems and to find solutions for themselves, by themselves.

Box 6. Environmental and life skills education for children from rural communities through IPM (Integrated Pest Management) student field schools – Thailand, Philippines, Cambodia, Bangladesh

The IPM Student Field School programme brings together teams of agricultural specialists, teachers and local farmers to teach a programme addressing the key rural issues of food security and environmental protection (FAO, 2001). It promotes the accountability of rural schools to parents for the quality and relevance of their educational programmes and the responsibility of parents to become involved in the schools. It helps open up school governance to community participation by working through Community-School Management Committees. IPM Student Field Schools contribute to the continuing education of the teachers of today and the farmers of tomorrow.

Box 7. Landcare in schools – Philippines

Landcare is an initiative which has been developed extensively in Australia and has spread more widely in the South East Asia Pacific region. In the Philippines, Landcare has been adapted for use with schools in Claveria (Mercardo et al., 1999) and in Lantapan (Catacutan and Colonia, 2000). In order to create an holistic approach to landcare which involves the whole community, schools have also become involved. It creates an opportunity for schools to enhance their environmental education programme and also integrates well with other subjects such as technology and home economics and science. It also aims to prepare young people for their future role as stewards of the land. The Landcare in Schools programme has started with an information and education campaign (including training of teachers in technical issues and facilitation skills) and progressed through formation of groups and clubs, establishment of school nurseries and demonstration of conservation farming and agroforestry techniques. Already there is active involvement from Parent Teacher Associations and Local Government Units. “Parents are already adopting soil and water conservation and agroforestry technologies as the result of encouragement from their children”. The key principle of Landcare in Schools is that “pupils, students and teachers can learn, work and enjoy together”.

Box 8. Nutrition-oriented learning materials – Tonga

EcoPort (an Internet-based programme which provides information factsheets on agriculture and the environment) was used to help farmers in Tonga through primary school children (FAO, 2001). Building on an identified need for extension, primary teachers worked with pupils on a specific agricultural problem using worksheets. Children took the message home and helped their farming parents to evaluate a particular crop disease. This raised the profile and the prestige of the child, an important person in the family and community.

Box 9. 'Farmers of the Future' – a new initiative

'Farmers of the Future' (ICRAF, 2002) is one example of an initiative which aims to test an integrated approach of contextualized learning and agroforestry in basic education. Through this programme, ICRAF intends to facilitate and contribute to institutionalization of agroforestry in basic education. In so doing, it aims to help to enhance the quality of learning in basic education systems and reach the farmers of the future, while at the same time influencing the farmers of today. This has the effect of scaling-up agroforestry technologies which have been tried and tested through farmer-led research and integrating them with teaching and learning approaches which have been found successful in rural primary schools and basic education. There is the recognition that a programme of this nature can and indeed should not be undertaken by a single organization. A broad initiative needs to be elaborated through collaboration with partners for complementarity and synergy.

Anticipated thrusts of the programme will be:

- Advancing education-related policy with relevant lessons;
- Enhancing the capacity of teachers to provide theoretical and practical education through contextualization of agroforestry-related teaching and learning materials and methods;
- Enhancing the capacity of clients of basic education to apply life skills through the medium of agroforestry;
- Linking schools and communities;
- Understanding context, needs assessment, synthesis of existing experiences;
- Information, documentation and communication; monitoring and evaluation.

Through partnership and collaboration between institutions, organizations and groups concerned with agroforestry and basic education, activities will be undertaken in rural schools where a need is identified at national and local level for an initiative of this kind. Evolution of specific activities will be based on a participatory approach and support to teacher training and materials development are likely to be significant components. Monitoring and evaluation of processes and outcomes, dissemination of lessons learned and policy advocacy are all seen as essential elements of the initiative.

Box 10. ‘Green certificates’ from primary schools in Chongqing – China

Over 100,000 rural students in Chongqing Municipality are to learn basic farming techniques at school, in order to provide students with fundamental farming knowledge. Although a city, 80 per cent of Chongqing’s population live in the countryside. 50 per cent of school leavers will remain living in rural areas and return to the countryside to farm. Textbooks have been designed according to the student’s needs and rural reality of the area and biology teachers are being trained to teach farming skills with support from external agricultural advisors from the local authority (China Daily, 2001).

1.4 Beyond agriculture: contextualizing learning in HIV/AIDS and environmental education

Agriculture is only one aspect of the lives of rural people. It is not a source of income for everyone living in rural areas and it may be familiar as only one aspect of the environment. There are many contextual features which are familiar to everyone, however, such as nutrition and health. The natural (ecological) environment is clearly a resource for contextualization. Just as agriculture can be used as a medium for contextualizing learning across the curriculum, so can other aspects of life. For example, exploring health issues within the local context can be a very effective way of addressing sensitive and complex issues such as HIV/AIDS. There are a number of examples of projects and programmes relating to environment, health and literacy which also draw on a contextualized approach. Although the main focus of this paper is agriculture, some interesting lessons are being learned from interventions which aim to contextualize learning within the wider rural development sector.

In the area of HIV/AIDS, Barnett, de Koning and Francis (1995) carried out a series of case studies in Pakistan, India, Uganda and Ghana. One aspect of their investigation was the relevance of health education curricula to the lives of young people and the way in which both health issues and HIV/AIDS are dealt with in the curriculum. They found that the relevance of the content and the way in which it is taught are critical. As has been discussed earlier, teachers untrained in both technical content and in use of appropriate learning methods and materials will not easily

bring about effective learning. The authors of this research posed three key questions:

- Do health education curricula address the health issues which **affect** young people (short and long term)?
- Do they address the health issues which **concern** young people?
- Do teaching materials reflect the **context** in which the young people live?

A number of interesting techniques were used to address these questions, including the Child to Child approach described in *Box 11*, which again draw on a contextualized learning approach, for example:

- draw and write techniques; in this research young people were asked to draw and write about what makes them unhappy and unhealthy. They were also asked to draw and write about AIDS.

One noticeable outcome of using the ‘draw and write’ exercise was the surprise expressed by many adults of how effectively the young people could express their ideas and how much more they knew than had been anticipated. Such insight can be built on to prepare materials which are much more likely to touch young people and make them responsive to learning, rather than working only from an ‘adult’ perspective of the world.

- ‘narrative method’; this begins with a story dealt with by young people through a role play and/or discussion which is then translated into a questionnaire for understanding more about sensitive issues.

In environmental education, Bude (1985) reported on a series of workshops in Zimbabwe which aimed to develop learning materials in a participatory way for a new primary school subject, environmental science. Organizers of the workshops brought together a range of stakeholders who together elaborated topics for the new curriculum which were relevant to the local environment and subsequently developed, tested and evaluated the material. As a result of the process, teachers were found to use more active methods, involving the students more and also more practical experiences in their teaching. Students were found to be acquiring knowledge and skills more effectively, but there were implications for increased time needed to develop the materials and also to teach in a way

which is quite different to the typical methods used in other subject areas. Van Lierop (1997) also described an FAO project (*Escuela, Ecología y Comunidad Campesina* – School, Ecology and Rural Community) for primary schools in the Peruvian Highlands which aims to give children a more relevant education. A series of thematic units, all relating to sustainable natural resources management, were integrated into the school curriculum. An important conclusion from this project of relevance for contextualization is that “the participation of community members is essential. Their knowledge makes it possible to make the content of courses regionally relevant. Methods for enrolling their support and involvement need to be developed”.

Experiences such as these have revealed that teachers need to be part of a long-term programme of professional development which will enable them to use similarly innovative approaches. They also show that policy makers and educational administrators have a critical role in creating an enabling environment for the introduction of innovative strategies of teaching and learning. Importantly, they reinforce the belief that the capacity of children to participate in their own learning processes, especially at an early age, has been greatly underestimated. This point was made also in a report entitled ‘Listening to Smaller Voices’ (Johnson, Hill and Ivan-Smith, 1995) which demonstrated that the use of methods encouraging children to express their own visions, perceptions and knowledge about various issues linked to development is a very powerful means of empowerment and engagement with what is often an unrepresented group in the community. The evidence in the report showed that, where children need to work in order to survive, the education provided for them should be “made relevant to the lives, work and aspirations of girls and boys themselves”. Only then does it have a chance to contribute to the improvement of life for children through alleviation of their poverty.

1.5 Lessons learned

1.5.1 What is working and why?

The examples of initiatives presented in this section of the paper are either underway currently, or are at an early stage in terms of planning or implementation. Looking at progress, there is the sense that this is an exciting time for agriculture in schools. Many innovative approaches have been tried with varying degrees of success and failure, yet novel ways of

working are still emerging. It is encouraging, particularly, to see that these approaches are not attempting to reinvent the wheel, but rather to build on what has already been seen to work, in other words the ‘success factors’. As discussed earlier, agriculture subjects have often received ‘bad press’ due to low prestige and certainly some inadequate teaching and learning experiences. Which adults would think back fondly to their school agriculture lessons when these involved manual labour in the hottest time of the day, harsh discipline and little or no direct personal benefit in terms of knowledge, skills, useful qualifications or even farm produce? How many of them would want their own children to go through the same kind of experience?

What really seems to be changing is the emphasis on the contribution of agriculture to the overall learning process. Six successful strategies for contextualization of learning using agriculture emerge clearly from experiences to date:

i. Innovative methods of teaching and learning introduced:

Relating learning to the agricultural context is *CHEAP*:

- Child-Centred
- Holistic
- Experiential
- Active
- Practical

ii. New materials developed:

- linked to the local environment and learners’ experience
- locally produced by teachers and students
- complementary to the existing curriculum and integrating topics/ subjects across the curriculum

iii. Nutritious food produced through environmentally sound practices and sustainable land use:

- applying a combination of indigenous and external knowledge and techniques
- yielding high quality vegetables, meat, fruit and dairy products, many of which may be of local, ‘traditional’ origin
- food for consumption by learners or for sale

iv. **Community members involved in schooling and school members involved in the community:**

- farmers and local experts help teachers and students learn about agriculture and land use systems
- parents and community members learn new ideas, methods and techniques from their children and teachers and from school demonstration plots
- As a result, this will:
 - maximize limited resources
 - develop relevant curriculum and learning materials
 - identify and address problems
 - promote girls' education
 - create and nourish community-school partnerships
 - realize democracy
 - increase accountability
 - ensure sustainability
 - improve the home environment(Uemura, 1999)

v. **Sustainable agriculture and rural development supported:**

- Good practice learned and shared between the school and the community
- Strong linkages to other aspects of community development; health, nutrition, environment, literacy, etc.

vi. **Advocacy for strengthening of institutions:**

- Sharing lessons learned and experiences with donors, educators, policy makers and the wider community
- Highlighting the need for continued and increased support for basic education and sustainable agriculture and rural development from key agents.

In order to implement these strategies, it appears from the above examples and from other sources (Wanchai, 1992; Uemura, 1999; DFID, 2000) that a number of critical factors are required for agriculture to become an effective medium for contextualization of learning. This list is not fully comprehensive, but is indicative of a range of needs and the areas in which funding is needed (more will be said on costs later in this section):

■ Physical resources:

- land for agricultural use on the school premises, with fertile soil
- water supply sufficient (through run-off collection or groundwater) for maintaining agricultural activities
- accommodation for responsible teachers on or near the school
- classroom and practical facilities which are safe and healthy for everyone using the school.

■ Human resources:

- a headteacher who is aware and supportive of the value of innovative approaches in teaching and learning
- decentralized school management, school advisory and inspection systems and school financing
- sufficient numbers of teachers to reduce the teacher-pupil ratio to a manageable level
- teachers with knowledge of local agriculture, environment and language
- a balanced proportion of men and women teachers
- a continuous, dynamic programme of staff development which encourages innovative curriculum interpretation and development of appropriate, relevant methods and materials for teaching and learning.

■ Community support:

To enhance the learning process in schools, it is necessary also to support and encourage the following, at community level (Uemura, 1999):

- sound parenting, creating a supportive home environment
- effective communication (school-home, home-school)
- volunteering (parental support to schools)
- learning at home (activities set by schools to be carried out at home)
- decision-making (community members in school decisions)
- collaborating with the community (identifying and integrating school and community resources).

1.5.2 Is scaling up possible?

A key issue for policy making is to identify whether the experiences documented here provide any basis for scaling up the approaches, methodologies and practices which have been seen to be effective, beyond the project or pilot schools and to the wider context of basic education country-wide, or even internationally.

To date, there is very little hard evidence of scaling-up of contextualized approaches to learning since, as noted already, few projects have focused explicitly on this. It is worthwhile, however, looking at lessons from scaling-up in a project which implicitly focused on a contextualized approach. Expansion was achieved in the Childscope Project in Ghana (see below).

Within the Afram Plains, the Childscope project moved from 12 to 25 communities and by 1998 was anticipating expansion to 76 communities. Regarding this expansion, the Childscope evaluation report (Agarwell and Hartwell, 1998) made the following pertinent remark:

“The central challenge for this expansion is to maintain the values and the integrity of the Childscope approach with an ever-broadening network of facilitators and the management of the process of growth. This is to be achieved, in part, by a focused and continuing staff training process, guided by the ‘Triple A’ approach (Assessment, Analysis and Action).”

Box 11. Childscope – Ghana

The Childscope Project in communities in Afram Plains in Ghana began in 1994 (Miller, 1995) with an initial objective to “develop a sustainable model for providing quality basic education, appropriate for boys and girls, in rural communities of Ghana.” It focuses on improving the education of the child through the joint efforts of the school, community and children. It places strong emphasis on girls’ education, includes a child to child approach (The ‘child to child’ approach has been implemented in many countries representing an innovative and action-oriented way of introducing active participation of children in order to spread information on health related issues (Ogoye-Ndegwa et al, 2002)), uses participatory rural appraisal (PRA) type activities to explore the experience of children and the community and on the relevance of appropriate teaching and learning strategies. The curriculum is reshaped according to needs of the community and life skills and teaching methods are

supposed to be linked across the curriculum. A recent evaluation (Agarwell and Hartwell, 1998) showed that the community response was very positive, but there was a much weaker response from the schools involved in the pilot project and from the Ghana Education Service. As a result, more children entered school, links between schools and community were strengthened, but the quality of teaching and learning did not improve noticeably. It was noted that in order to bring about improvements in teaching and learning, there was a need for a steady, stable, adequate teaching force and a well managed programme of professional support, supervision and development.

During the expansion process, issues of facilitating conflict resolution, team management and development were all seen as important and needing support through training. The question also arose of how to deal with the increased demand for support from an existing Childscope team by a much larger number of communities and schools who were introducing the approach. This is a challenge which has arisen in many scaling-up exercises, sometimes resulting in a core team of experienced persons spreading themselves too thinly by trying to meet too many demands for support. In the case of Childscope, it was recommended:

“that Childscope serve as a ‘training centre’. Those who wish to learn would come to Afram Plains and participate in the on-going work of the team. This could result, if organized well, in the double benefit of providing hands on experience and training to those who participate, while actually enhancing the work within the project by providing fresh insights, enthusiasm and ideas.”

Expansion also occurred within the Social Forestry Education and Participation Project in Thailand. Interestingly there were different opinions about the scale of expansion between the project team who preferred to move slowly and the Ministry of Education who wanted to see a rapid building on success. The SFEP saw an expansion from six primary schools and two lower secondary schools in 1993 to new project involvement in 64 primary schools by 1998 and in 156 more schools by 1999. This was achieved by staff from the initial pilot schools providing training for teachers in the 64 new schools and “teachers, principals, supervisors and village headmen new to the project visit project schools, which are serving now as demonstration schools” (McDonough and Wheeler, 1998). In addition,

training in the local study methods used successfully in the project was being provided to fifth and sixth grade teachers “in a larger set of primary schools (at least three schools in each of Thailand’s 76 provinces)”. And finally, “all fifth grade teachers in some 14,000 primary schools participating in a Ministry of Education school reform programme have received some instruction on how to use community resources to improve science instruction”. At the secondary level, “the two participating rural secondary schools were selected by a major Thai foundation to serve as model schools to provide staff development to secondary schools in all four regions of Thailand interested in this approach to education.” The report ends with an important coda: “How these various strategies will evolve remains an important question”.

Although it is impossible for this paper to provide a set of solutions which would guide scaling-up and accepting that this ‘important question’ asked by the SFEP will hold true for every initiative, there are some issues which are worth considering. Hopefully these will assist practitioners and planners in asking the right questions, so that they can at least work with other stakeholders to discover the answers for themselves.

i. Teacher training and support

It is apparent from the many examples presented in this paper that teacher training and support is a critical factor if contextualized learning approaches are to be used more widely. For example, teachers will need to aid their pupils in utilizing, acknowledging and relating to their own experience and introduce new experiences which link and build upon those which exist already. This requires that teachers learn from and about the different environments in which their pupils live their lives and interpret and understand them in a way which leads to the development of appropriate teaching and learning methods and materials. Such support can be provided through both pre-service and in-service training, but of course it depends upon the knowledge and capacity of the teacher trainers themselves to provide appropriate training. Thus, training of the trainers in innovative approaches will be necessary, as will awareness raising and training for educational administrators and school inspectors. There will also be a need for more of a ‘training and coaching’ approach to teachers’ professional development, where teachers maintain a closer professional contact with their colleagues and their trainers, rather than undergoing very occasional, ‘one-off’ training events. Generally speaking, teacher

development will need to become a more participatory process than it has been traditionally. Teacher trainers (both initial and in-service), teachers and pupils need to become collaborative learners. This has implications for power relations and more will be said about this below.

ii. Institutionalizing methods and approaches

Many countries already have policies in place which ‘allow’ or encourage innovative approaches such as those which have been discussed in this paper. However, this does not lead automatically to policy implementation. For example, written guidelines given by education authorities to teachers on how to contextualize their lessons will rarely be sufficient to bring about actual change. Teachers need to be involved directly with the evolution of these innovations, not second-hand receivers.

Many of the innovations described in this paper have begun as pilot projects. Where a pilot project approach is used, it is important to identify clearly, and, if possible, at the beginning, a strategy for gradual transfer of ownership to the national or local government. Without this, ‘pilots’ may continue until external funds run out and then stop with no further impact, regardless of how good the methods or processes are.

Monitoring and evaluation should be a systematic part of any intervention and the results should be disseminated as part of a wider participatory approach. All stakeholders, including school pupils, should be involved in this process. Both successes and failures should be shared. Education is not a fixed, ‘input-output system’; it is complex and involves people and society. Thus it is important to be realistic and to share real lessons, not idealized stories.

iii. Building partnerships and co-operation

Partnerships between different organizations and institutions are vital. There is probably not one individual, group or organization which has the capacity alone to bring about effective change in basic education. Synergies and complementarities must be sought. Many of the success stories presented here have involved partnerships between several quite different stakeholders. For example, a programme of change which requires teachers to introduce new methods of teaching and learning may well require curricular change. Change to the examination and assessment system is

also likely to be needed, if success is to be attained. Establishing this kind of co-operative arrangement is often difficult and may take time, however, a fact which needs to be appreciated more widely. Although participation is seen by many agencies as a 'good thing', the associated requirement for additional time and resources is not always recognized. Also, increasing the level of participation of different stakeholders inevitably leads to issues of power and conflicts between different groups and individuals. In basic education, there are many marginalized groups: children from poor families, remote rural locations or with special needs; girls; women teachers, poor members of rural communities etc. It is also unrealistic to speak of 'rural communities', 'teachers', 'pupils' or 'parents' as homogeneous groups. Within such groups, very diverse interests are usually represented.

Finding ways which allow real participation of groups such as these is very difficult. Although this is not an issue which can be pursued further in this paper, there are many experiences available about scaling up of participatory approaches in development generally which can be drawn upon. Uemura (1999) notes a number of challenges to establishing community participation more widely in education:

- complexities of power and conflict in communities;
- socially and economically marginalized communities lack awareness and capacity to become deeply involved in education;
- some teachers are resistant;
- some community members are unwilling or disinterested;
- some parents are suspicious of government motives to involve communities in schooling;
- parents and teachers often perceive their roles as different from each other.

Uemura goes on to suggest a number of useful strategies which can be used to promote scaling up of community involvement in primary schooling, one of the necessary factors for contextualization noted earlier:

- strive towards an understanding of the nature of community and the relationships between different groups and institutions;
- assess capabilities of communities and responsible agencies and provide assistance with capacity building, institutionally, technically, financially and politically in order to increase the potential for participation;

- establish communication channels between all stakeholders;
- conduct continuous assessment and monitoring, including the generation of appropriate indicators.

As a warning note, an important lesson learned from many projects is that it is vital to think about scaling up at the beginning of an intervention and not to see it as an add-on. There is a real (and frequent) danger of creating elaborate, well-resourced pilot projects which cannot be used as a means of generating experiences or lessons useful in other contexts, or even elsewhere in the same context.

1.5.3 Resource, cost and monitoring issues

Although much attention is given by education funders to the economic basis for any educational reform, estimation of the returns for any educational investment is always complex. Educational cost-benefit analysis is notoriously difficult and is often controversial (Hough, 1991). Although it is certainly possible to consider budgets and expenditure from individual projects and then to try to extrapolate these to create figures for the cost of contextualized approaches, ultimately the resources required (and the costs) will be determined by the local context. Rather than look into actual figures, it may be more useful to raise some pertinent issues regarding resources required, costs and monitoring of contextualization. The preparation and planning of any such initiative would of course need to include careful financial planning.

Taking the points from the previous discussion, teacher training and support will clearly require adequate funding. Funds will be required for investment in professional development of teachers, headteachers and teacher trainers. This will be needed not only for the actual initial training and on-going support and coaching, but also for the management of this staff development process, within the schools and also at a higher level, with the local education authorities, for example. Schools inspectors may also require awareness raising in new approaches and methodologies. In relation to this, resources will be needed for materials development. Some of this may be achieved locally, ideally within the schools themselves. In practice, it is extremely important to advocate for a decentralized budget, covering staff development and also enabling teachers to prepare materials and to facilitate experiential learning through practical activities. This will have an implication also for physical resources. Although many schools

will never be able to afford specialized classroom furniture, even individual chairs, at least the learning environment should be made safe and be kept at an ambient temperature. A minimum level of visual aids such as a blackboard and chalk or even home-made display equipment is obviously needed, but as learning becomes more active and participatory, then the requirement for suitable learning materials increases, as does the cost. There is some advantage therefore in providing teachers with training in production of teaching and learning resources using locally available materials, being cheaper, repairable and replaceable if necessary.

For institutionalizing methods and approaches, the main issues were already raised above. Increased teacher participation in curriculum and learning strategy development will require resources for meetings and materials and more time from teachers. The reality of the lives of many teachers in rural schools is a combination of teaching and other work to ensure that they can support themselves and their families. The more time spent in the school which is not covered by their meagre salaries, the less time they have available for other forms of income-generation. For this reason, many projects find it necessary to provide teachers with a financial incentive for the additional time they spend on project-related activities. Many pilot projects run successfully as long as external funding is available, but once this stops, the initiative rapidly draws to a close. It is worth reiterating the importance of ensuring financial support from the normal government institutional channels beyond the life of an externally funded project. This means that innovative approaches may need to be approved by the formal education system, a process that is often drawn-out and bureaucratic. For this reason, forward planning is essential and strategies for institutionalization of innovations need to be considered at the start of projects rather than the end, to avoid financial crises which put an end to otherwise successful efforts.

Regarding community involvement, there are of course many costs and resource issues to be considered. Many donors have explored the idea of cost-sharing, but this has led to difficulties:

(...) the aggregate effect (of cost sharing) seems to have been that cost sharing has contributed to a stagnation in enrolment ratios and failure to improve the quality of educational provision and that it has enabled governments to avoid difficult reforms (Penrose, 1997).

Some donors (e.g. DFID, 2000) generally support the conclusion that national resources for basic education and health should be raised through general taxation and other forms of government revenue, rather than direct community or individual contributions. In order to avoid further marginalization of people in remote rural communities, this certainly makes sense. However, many of the cases illustrated in this paper have shown that rural community members are more than willing to donate their time, energy and even material resources to schools if they feel that their children are truly benefiting from their education. Rather than exploiting rural people and exacerbating their poverty, initiatives which bring schools, homes and communities closer together may lead to innovative and collaborative resource management approaches as well.

Finally, most educational change takes much longer than many other development interventions and so it often takes longer to see the impact. This may be problematic for investors and donors in education who would like to see short-term benefits from their investments. For this reason, it is important that all stakeholders in education initiatives think early on about indicators of success, based on other experiences and on the reality of the local environment and are involved continuously and transparently in monitoring processes. Initially, the biggest gains are likely to be in human resource development, the results of which are often hard to measure quantitatively, but in the long term, this human capital will prove an essential resource for further improvement in the quality of teaching and learning.

1.5.4 What are the implications for planning and curriculum issues?

One of the most difficult issues to deal with is the dichotomy between the frequent requirement for a national, centralized curriculum with the need to create greater local, decentralized curricular adaptation. National planners will certainly continue to develop national curricula. The great challenge is to empower and enable teachers to interpret a prescribed curriculum in relation to a local context. In order to contextualize teaching and learning, a teacher must identify aspects of the learners' experience which will provide a valuable resource of basic concepts, metaphors and analogies to which the content of the curriculum can be related. Such an approach has implications for teacher training and support. Teachers would need to develop an understanding of local agricultural conditions and also to have the capacity to learn from the local environment and from their

pupils. It would be necessary, also, for teachers to be able to produce learning materials which draw on agriculture as the context for the learning. Some school text books have been produced recently which encourage teachers to use agricultural illustrations for mathematics, science and languages. Also a large amount of useful learning material relating to agriculture and sustainable rural development is now available in electronic form and can be found, for example, on the internet. The whole area of information communication technologies does of course have immense potential, but as yet, very few schools in remote rural areas have access to ICTs. Indeed, many do not even have supplies of electricity or telephones. It is worth noting, however, that central nodes in education support systems, for example in provincial or district towns, will increasingly have access to ICTs. There may be great future potential in regional education advisers and teacher trainers downloading learning materials, or perhaps, the ideas behind those materials and disseminating them to primary school teachers who in turn can adapt them for local contextualization.

Building relationships between teachers and other local stakeholders, including of course the individual learners, is another key issue. To enable teachers to achieve this, bearing in mind the heavy burdens they already carry, national planners will need to consider carefully the load of the curriculum itself and where possible to lighten it. Also, it is clear from the evidence of this paper, that frequent curriculum change is far from helpful, especially where teachers are seen only as implementers of a rigid and inflexible list of content. If curricula are ‘fixed but not full’, teachers may be able to identify entry points through which they can build learning upon the local context. They may need help to do this, certainly, but without the space to manoeuvre, even well trained teachers will not be able to change the way in which they work. One practical strategy to help teachers manage the process of curriculum development and interpretation at school level is to institute regular ‘curriculum conferences’ which are empowering events involving teachers, school inspectors, tutors, etc. (Bude, 2000).

These can provide a platform for training workshops in the production of curriculum materials for schools. The main purpose ... is the transformation of national or regionally planned curriculum guidelines into practical lesson units that reflect local conditions and concentrate on existing cultural and ecological traits. Educationalists from different levels of primary or secondary education jointly design

lesson units for specific subjects for particular classes/standards. If educators learn how to translate curriculum guidelines into structured steps for teaching at the classroom level and develop learning opportunities that create chances for active student involvement, the prescribed core curriculum stands a better chance of actually being implemented (Bude, 2000).

Where more freedom exists for extensive local-level curriculum development, learning programmes should be based on well-identified needs and competencies which are required for people to develop sustainable livelihoods in rural areas, whilst still allowing for the possibility of advancement through the education system if this is desired strongly by key stakeholders.

A litmus test for success of the use of agriculture as a medium for contextualized teaching and learning is its potential to enable young people to cope more effectively with general subject matter in school. At present, passive, written examinations are the arbiters of success in most national education systems and this situation is unlikely to change in the near future. Although decentralization of examination procedures is often discussed, many national policy-makers still feel unwilling to introduce continuous assessment procedures which place new demands and responsibilities on teachers. It will be crucial, therefore, that parents and pupils feel that a new, innovative strategy introduced in schools will not reduce the chances of success in examinations; the aim of a strategy such as contextualization is in fact to increase this chance of success, since by understanding abstract concepts better, pupils should perform better in examinations. Also, pupils who have left school should find that they are able to apply what they have learned in their local communities and school pupils themselves will gain satisfaction from their own personal development. These skills will be useful, too, to those children who do succeed in progressing to higher levels of education. In short, the overall goal of a contextualized approach is to encourage learning *for* life, by relating learning *to* life.

2. Revisiting garden-based learning in schools

2.1 Definitions

Theoretical and methodological approaches to garden-based learning vary greatly across the educational landscape, however the application of

the pedagogy falls principally under one of two frameworks, experiential education (in contemporary language frequently referred to as project-based learning) and/or environmental education. In theoretical terms garden-based learning also finds relevance in two contemporary educational theories, Howard Gardner's (1983) theory on multiple intelligences and his recent work (1999) on the naturalist intelligence and Daniel Goleman's (1995) theory of emotional intelligence (see *Box 12*). This contribution will also explore a number of additional contemporary commentaries that shed light on the practice of garden-based learning and its contributions across the curriculum. There is a related field of study and practice referred to as agricultural literacy, education *about* agriculture. Examples of this practice are provided to illustrate the similarities and differences between the two endeavours.

2.1.1 Experiential education and project-based learning

There has been a significant growth in interest in experiential education and project-based learning as educators recognize the value of hands-on learning. In its simplest form experiential education is best described by the American Association for Experiential Education, which states that "Experiential education is a process through which a learner constructs knowledge, skill and value from direct experiences."

Project-based learning (PBL) has been at the roots of effective education and was called for by early educational philosophers and practitioners. The current call to return to this pedagogy is prompted by research on children's learning (Kandel and Hawkins, 1992) and by exemplary projects around the world that demonstrate the value of hands-on learning. The pre-schools of Reggio Emilia, Italy (Edwards et al., 1993), and models such as the Coombs Infant and Nursery School in Great Britain as studied by MOVIMUM – Centre for the Urban Environment in Sweden, clearly demonstrate the unique contributions to be made by project-based learning. In the United States the growing interest in project-based learning can perhaps best be seen in the activities of the Project-Based Learning Network. This organization describes project-based learning as a strategy that:

- engages students in complex, real-world projects through which they develop and apply skills and knowledge;

- requires students to draw from many disciplines in order to solve problems;
- recognizes that significant learning utilizes students inherent drive to learn.

Most PBL practitioners see this strategy as complementary to the formal curriculum and believe it is “not a separate subject, like mathematics: it provides a context for applying mathematical concepts and skills. Nor is project work an add-on to the basics; it should be treated as integral to all the other work included in the curriculum” (Katz, 1994).

While experiential education and project-based learning offer excellent strategies or pedagogies, they require a contextual framework or thematic structure in which to operate. Environmental education and more specifically garden-based learning can provide that context or thematic focus. This contribution will look at some samples of this when we examine a few programmes currently in operation around the world.

2.1.2 Environmental education and ecological literacy

Much of the activity in garden-based learning is quickly classified as environmental education. David Orr and others suggest that gardening with children can be the first step in developing ecological literacy. Both concepts will be reviewed in attempting to describe the gardens’ true role in education. The national report, “Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning” (Lieberman and Hoody, 1998) describes the pedagogy that employs the natural environment and helps to identify the ‘best practices’ of successful educators in this arena.

The definition of environmental education offered by the North American Association for Environmental Education is that it is a process that aims to develop an environmentally literate citizenry that can compete in our global economy; has the skills, knowledge and inclinations to make well-informed choices; and exercises the rights and responsibilities of members of a community. The Association for Supervision and Curriculum Development, an international association of professional educators, characterizes environmental education as:

- drawing on disciplines in the natural sciences, social sciences and humanities, based on knowledge about ecological and social systems;

- reaching beyond biological and physical phenomena to consider social, economic, political, technological, cultural, historical, moral and aesthetic aspects of environmental issues;
- acknowledging that understanding the feelings, values, attitudes and perception at the heart of environmental issues is essential to exploring, analyzing and resolving these issues;
- emphasizing critical thinking and problem-solving skills needed for informed, well-reasoned personal decision and public action (Disinger and Monroe, 1994).

Ecological literacy as defined by Fritjof Capra is the understanding of the principles of organization that ecosystems have developed to sustain the web of life. It also means having the skills to act on that understanding in one's daily life to insure sustainable communities that support all forms of life. The emphasis here is clearly on the broad concepts of ecology and sustainability. David Orr, chair of Environmental Studies at Oberlin College and Robin Moore at North Carolina State University (Moore, 1995) make a strong case for the inclusion of ecological literacy at an early age "when the tug towards life is strongest and when we are most alert and impressionable." Orr also suggests that early education in ecological literacy is imperative in developed countries "before their (children's) minds become marinated in the culture of television, consumerism, shopping malls, computers, freeways..." In developing countries the case for ecological literacy is equally strong, however the obstacles are not the products of western technological society, but rather the realities of poverty and limited access to educational resources and the consequences of these two forces, namely hunger, disease, despair, environmental degradation, social unrest, political instability and war.

2.1.3 Agricultural literacy (education about food and fibre production–agriculture)

With increasing frequency and urgency societies in developed and developing countries are called upon to make decisions about critical agriculture-related issues such as food safety, land use and water policy (Rilla and Desmond, 2000). In 1989 the United States National Academy of Sciences report entitled "Understanding agriculture – new directions for education" concluded that most people do not have a clear understanding of agriculture. The Academy's definition of agricultural literacy, as education *about* agriculture, included the following: "An agriculturally literate

person's understanding of the food and fibre system includes its history and current economic, social and environmental significance to all Americans. This definition encompasses some knowledge of food and fibre production, processing and domestic and international marketing. As a complement to instruction in other academic subjects, it also includes enough knowledge of nutrition to make informed personal choices about diet and health" (National Academy of Sciences, 1989: 1-2).

In today's urban societies a child's contact with the land is limited. For many inner-city youths the contact with natural ecosystems is nonexistent. Nabhan and Trimble (1994) offer a well-documented argument for renewed efforts in environmental education due to the increasingly urban culture in which most children are being raised (in developed and developing countries). They provide a detailed discussion of the fact that in many parts of the world children are rapidly losing contact with nature in their daily lives. In such settings, an understanding of natural systems, delivered in the context of our current educational system, presents a real challenge. Once a culture begins to move toward a wage economy, no longer directly in touch with food production, natural and agricultural resources are taken for granted. Children no longer absorb the details, make the connections, or understand the whole (Nabhan and Trimble, 1994). Garden-based learning can offer one solution toward resolving this dilemma for our current educational system.

2.1.4 Agricultural education (education in food and fibre production – agriculture)

In most contexts agricultural education refers to vocational education in agriculture. The development of the specific skills and knowledge necessary to become effectively employed in some aspect of the system of commerce that provides a society's food and fibre. Depending on one's definition of a garden, agricultural education can be considered as one form of garden-based learning. In vocational agricultural education in the United States and many other developed countries, the use of project based education as an effective tool for learning has been clearly established. In many cases the projects are gardens with the scale varying depending on available resources and the developmental stage of the youth involved. In developing countries agricultural education can be seen at the elementary level where programmes such as 'Adopt a garden' at the Selam Technical and Vocational Centre in Ethiopia develop the necessary skills and

knowledge in elementary and secondary students so that they can provide vegetables for the family diet. Clearly this system of agricultural education utilizes garden-based learning as an effective tool for vocational education. In Cuba the Pioneros (Youth pioneers) programme is an important addition to the basic schooling at the primary and secondary levels.

Whether garden-based learning occurs under the definition of environmental education, ecological literacy, agricultural literacy, or agricultural education, it seems to have the potential to contribute to basic education in both developed and developing world settings. To be effective, however, garden-based learning programmes must be tied to a comprehensive and cohesive educational plan/programme or garden curriculum that is implemented across grade levels and is tied to local, state, or national education standards or needs. The practice of garden-based learning must take on the rigorous guidelines suggested by studies such as the ‘Closing the achievement gap – using the environment as an integrating context for learning’ (EIC) (Lieberman and Hoody, 1998).

The literature suggests that garden-based learning can be a unique and effective strategy to be used in basic education to introduce an experiential component in support of the traditional curriculum. It can also be used as an environmental education curriculum.

2.2 Roots and history

The philosophical roots of garden-based instruction can be found in the work of many educational theorists. The philosophies of Comenius (1592-1670), Rousseau (1712-1771), Pestalozzi (1746-1827), Froebel (1782-1852), Dewey (1859-1952), Montessori (1870-1952) and Gardner (1943-present) all relate in some way to garden-based learning. Here are just a few examples:

- **Comenius:** For every school “... there should be a garden attached where they (students) may feast their eyes on trees, flowers and plants ... where they always hope to hear and see something new. Since the senses are the most trusty servants of the memory, this method (gardens) of sensuous perception will lead to the permanent retention of knowledge”.

- **Rousseau:** "... since everything that enters into human understanding comes through the senses, the first reason of man is a reason of the senses. Our first masters of knowledge are our feet, our hands and our eyes".
- **Pestalozzi:** "Students observe first all of the objects in the classroom, observing and naming everything. When this is exhausted, they are taken into the garden, into the fields and woods – where they are led to notice objects in greater detail, their permanent and changeable qualities, the qualities that are general and those that are peculiar to them, their influence, their function, their destiny".
- **Froebel:** "The pupil will get the clearest insight into the character of things, of nature and surroundings, if he sees and studies them in their natural connection ... the objects that are in closest and most constant connection with him, that owe their being to him ... these are the things of his nearest surroundings ... the garden, the farm, the meadow, the field, the forest, the plain... Instruction should proceed from the nearest and known to the less near and less known" (Froebel, 1826).
- **Dewey:** "Where schools are equipped with gardens ... opportunities exist for reproducing situations of life and for acquiring and applying information and ideas in carrying forward of progressive experiences. Gardening need not be taught either for the sake of preparing future gardeners, or as an agreeable way of passing time. It affords an avenue of approach to knowledge of the place farming and horticulture have had in the history of the human race and which they occupy in present social organization. Carried on in an environment educationally controlled, they (gardens) are means for making a study of the facts of growth, the chemistry of soil, the role of light, air, moisture, injurious and helpful animal life, etc. There is nothing in the elementary study of botany, which cannot be introduced in a vital way in connection with caring for the growth of seeds. Instead of a subject belonging to a peculiar study called 'botany,' it will then belong to life and will find, moreover, its natural correlation with the facts of soil, animal life and human relations ... It is pertinent to note that in the history of man, the sciences grew gradually out of useful social occupations".

- **Montessori:** “When he (the student) knows that the life of the plants that have been sown depends upon his care in watering them ... without which the little plant dries up, ... the child becomes vigilant, as one who is beginning to feel a mission in life” (Montessori, 1912).
- **Gardner:** “Just as most ordinary children readily master language at an early age so too are most children predisposed to explore the world of nature” (Gardner, 1999).

Box 12. Theories behind garden-based learning

A scientific inquiry into why gardens are a useful teaching tool could be informed by research in the fields of developmental and educational psychology, from theories of experiential education and intelligence as well as the impact of outdoor environments on children.

Theories of experiential learning

According to Kolb’s experiential learning model (Kolb, 1975 in Weatherford and Weatherford, 1987), concrete experience leads to observations and reflections that result in the formation of abstract concepts and generalizations of these concepts as well as the capacity to test the implications of these concepts in new situations. Piaget and other scientists have shown that a child’s understanding is developed through his actions on the environment and not merely through language. Another unique point about experiential education is that it is based on the intrinsic motivation of the learner.

Theories of intelligence

Theories of intelligence such as Howard Gardner’s theory of multiple intelligences and Daniel Goleman’s conceptualization of emotional intelligence, have contributed to the value of experiential education, in developing linguistic, musical, logical-mathematical, spatial, bodily kinesthetic and personal abilities as well as emotional skills (Carver, 1999). Furthermore, Gardner reframed his earlier theory, making additions to his previously cited seven intelligences, one being the naturalist intelligence. Intelligence is identified in reference to a socially recognized and valued role that appears to rely heavily on a particular intellectual capacity (Gardner, 1999). In this way a naturalist intelligence is characterized by a person’s ability to recognize and classify his or her natural environment. Gardner claims that just as most children are ready to master language at an early age, so too are they predisposed to explore the world of nature.

Theories about children's environments

In a socio-ecological model of a child's outdoor landscape (Moore and Young, 1978), it is proposed that a child lives simultaneously in three interdependent realms of experience: the physiological-psychological environment of body/mind, the sociological environment of interpersonal relations and cultural values and the physiographic landscape of spaces, objects, persons and natural and built elements. The freedom of the outdoor environment serves as a balance to a child's supervised indoor environment, resulting in volitional learning.

Developmental theories

Developmental psychologists have tried to study children's relationships with nature and whether an innate sense of kinship with nature manifests by the time they reach a certain age (Tuan, 1978). Edith Cobb (1969) wrote that middle childhood, approximately from five to six years of age to 11 or 12 – that is, the period between the “strivings of animal infancy and the storms of adolescence” – is when the “natural world is experienced in some highly evocative way.” Tuan (1978) additionally suggests that children have to be taught by adults about their natural environment, as “nature is an inarticulate teacher”. Children show a natural curiosity about the world, but this curiosity may be easily repressed if adults fail to nurture it.

It must be recognized that while all of the advice provided by these figures is relevant in garden-based learning, a similar relationship can be drawn to other forms of experiential and/or environmental education.

In the United States, the history of children's gardens and garden-based learning is well documented from the 1890s to the present. The school garden history in other parts of the world and through earlier civilizations is less well documented.

Elizabeth Meyer, in a paper titled ‘Cultivating change – an historical overview of the school garden movement’, describes the early school garden movements, which had their origins in Europe. Meyer discusses the Austrian book *The school garden* by Erasmus Schwabb, published in 1879 and translated into English by Mrs. Horace Mann. This publication illustrates much of the early motivation for garden-based learning in Europe. An actual timeline of the early development of school gardens in Europe and the United States has been presented by Kendall Dunnigan who, following Meyer's accounts, traces gardening in schools from the late 1800s in Europe

through 1997 at which time a National Gardening Association survey found that over 3.6 million youth in the United States were gardening in school programmes. Dunnigan points out that in 1869 Austrian law mandated a garden in every rural school. By 1898 there were 18,000 school gardens in Austria and Hungary and by 1905 over 100,000 school gardens in Europe. Thomas Bassett (1979) also documented the early history of school gardens in North America. Bassett notes that many American educators were impressed by the use of school gardens in Germany, Sweden and Austria for nature study and promoted adoption of the school garden concept. Bassett elaborately describes the school garden movement in the U.S., including a description of the 'school garden par excellence' (Green, 1910) with illustrations from school gardens in Canada and the United States.

What is important here is not the chronology of this movement but the historical underlying motivations that led educators, parents and public officials to embrace the garden as an effective learning environment. An equally important question we must address is why this rich early history in garden-based learning did not become mainstreamed into the educational curriculum of schools.

There has also always been a vocational and practical side to garden-based learning. That aspect of the practice has not shown the cyclical swings seen in the more academic settings. In this case using the garden to teach basic vocational skills in plant science, horticulture, agriculture and environmental science has continued virtually uninterrupted in a variety of formal and non-formal educational settings such as Pioneros in Cuba, 4-H and Future Farmers of America (FFA) in the United States and the Adopt a Garden programme at Selam Vocational Centre in Ethiopia. Garden-based learning as an informal educational practice also occurs throughout the world as communities and families teach succeeding generations to garden as a source of food, fibre and medicinal/social products.

In each era the lure of garden-based learning in basic education was premised on its facilitation of the following educational strategies that are universally accepted as valid, if not essential, pedagogical approaches to meaningful learning. While certainly related, these concepts – learn-by-doing, project-based learning, real world learning, child-centred learning – clearly focus on engaging the learner as the central figure in educational experience and in allowing individual and social constructivism.

In addition, as Meyer states, school gardens were seen as settings that “create a sense of community, instil concern for the environment, foster a connection with nature and help students to develop self-confidence, discipline, skills in co-operation and multi-cultural understanding.” In historical perspective we see that garden-based learning is predicated as a contribution to all aspects of basic education:

- academic skills;
- personal development;
- social development;
- moral development;
- vocational and/or subsistence skills;
- life skills.

If, as these authors suggest, garden-based learning can have a significant positive influence in basic education, why hasn't the pedagogy become institutionalized in the educational mainstream? There are several possible explanations. One is that the pedagogy has not been critically examined and endorsed by educational researchers and practitioners. A second is that there is no developed discipline in garden-based learning that makes the connection to project-based learning, effective experiential education and advancement in academic performance. Related to that shortcoming is the lack of infrastructure support for school gardens or related garden-based learning efforts. And finally there is often no local strategy to sustain the physical plant of the garden site as a permanent part of the school or programme facility.

2.3 Contemporary movement: overview and future directions

A review of garden-based learning programmes in developed and developing countries show many similarities in basic motivations for using the garden. In virtually all settings the garden is viewed as a tool of multiple uses:

- to support core academic training, particularly in science and math;
- to add a sense of excitement, adventure, emotional impact and aesthetic appreciation to learning;
- to teach basic skills and vocational competencies;
- to teach about food and fibre production;
- to teach ecological literacy and/or environmental education;

- to teach sustainable development;
- to produce food and other commodities for subsistence consumption and trade;
- to improve nutrition, diet and health;
- to teach the art and science of cooking with fresh products from the garden or local farms;
- to re-establish the celebratory nature of a shared meal.

There is a difference in the degree to which developed and developing countries emphasize various elements in the garden mission or objectives, however the differences are not as pronounced as was expected.

In considering best practices for garden-based learning, the first and possibly most important is the establishment of a sound rationale or framework for the pedagogy. A second critical area for consideration involves questions on how to start and sustain a programme in garden-based learning.

One of the repeated warnings in the literature about the effective use of garden-based learning is that it cannot be a forced add-on, practised on an occasional or seasonal basis, but instead must be developed through a thoughtful process and included on a daily basis. In an attempt to identify some of the results of the practice a broad view of garden-based learning is offered here.

Impact indicators are the specific information or evidence that can be gathered to measure progress toward programme goals. Impacts of garden-based learning on basic education have not been examined critically except in a few cases such as the Monterey Bay Science Project where Life Lab gardens (see *Box 13*) were used to assist teachers in developing a constructivist, inquiry-based approach to teaching science and language. Further study is needed in order to point to impacts such as improvement in science education or greater understanding of ecological cycles. This will require that garden programmes establish specific goals for their efforts.

Outcomes are the things that occur as a result of having conducted the programme. They can be intended or unintended, positive or negative and relevant or nonrelevant. The outcomes cited are predominately based on anecdotal evidence and there is little research that demonstrates a clear cause and effect relationship.

Clearly in many settings around the world a portion of the school day has been devoted to garden-based learning. Resources (teacher time, school budget, land, school volunteers, etc.) have been redirected from traditional classroom instruction to a more experience-based activity that takes place outdoors or in classroom growlabs. The number of students involved in such activities has not been carefully studied. The following sections describe future directions and issues in both developed economies and developing countries.

2.3.1 Developed economies

For the existing programmes in garden-based learning in Australia, Canada, Europe and the U.S., there are a few trends that seem to illustrate future directions. We summarize these trends below:

- *Educational integrity.* In the developed economies, garden-based learning is viewed by some as a more effective strategy for basic education. However, to accept this idea requires a general improvement of the educational integrity of the practice. There is a need for an overall educational strategy statement and implementation guide for garden-based learning that articulates the advantages of the pedagogy and makes the connection between the practice and various proposals for educational reform (experiential education, emotional intelligence, etc.). Such guidelines exist for environmental education and agricultural education and could serve as a template for garden-based learning. A strong emphasis on improved academic performance in schools within some countries has meant that garden-based learning must be tied to the standards and benchmarks in core subjects to attain credibility within the educational community. There is a large body of knowledge that suggests that science education can be improved through use of an applied, hands-on curriculum. If the garden can be ‘marketed’ as a learning laboratory in a credible fashion, similar to the Life Lab Program based in California, then the emergence of school gardens could have a significant impact on elementary science education.

There is also a need for more research on the impacts of garden-based learning on student academic achievement, environmental attitudes and self-esteem.

Some informative responses to the question of what garden-based learning contributes to basic education are listed below:

- makes learning real – Junior Master Gardener Program, Texas, United States;
 - brings basic education to life in living colour – Garden of Learning, California, United States;
 - inspires learning and creativity in all subjects. The (children's) joy is self-evident and the learning experiences are not soon forgotten – Munich International School, Munich, Germany.
- *Garden maintenance.* For schools and programmes with a significant investment in garden infrastructure (physical site, equipment, plant material, etc.) there is a growing realization that a garden co-ordinator or strategic plan (e.g., Garden of Learning) must be in place to effectively engage these resources as educational tools. Relying on overworked teachers, custodians, groundskeepers or transient volunteers is not a sustainable strategy. The garden must be viewed as an integral part of the educational plan for the school (e.g., as a classroom) and financed accordingly as a part of the overhead of operations. If this is not the case, then long-term sustainability is in jeopardy and the garden becomes a burden to the creative energies of staff, parents and community volunteers.
 - *Educational linkages.* School gardens and garden-based learning in some settings (those following best practices identified above) seem to lead to a new sense of community at the school. This encourages greater participation by parents and community members, not unlike athletics, but perhaps in a more nurturing, less competitive environment.
 - *Food cycle and nutrition connections.* Increasingly school gardens are being used as vehicles to teach the food cycle, nutrition and culinary science. In California's 'Edible School Yard' at Martin Luther King, Jr. Middle School and Australia's 'Kitchen Garden' at Collingwood College there is a serious investment in using the garden to change the attitudes and eating practices (thus nutrition) of students. At the same time these schools are attempting to develop a new or renewed cultural respect for food, the land that provides it and the way we enjoy it as a family or community. This new emphasis or

identification of food and its origins as a cultural imperative to be understood and appreciated by children is not only a developed world phenomena, but is also found in less affluent economies such as Cuba. In many schools in California there is a growing movement to connect the school garden with the school cafeteria (school food service) and with local farms that produce the food. The U.S. Department of Agriculture and California State Department of Education are actually providing small grants to initiate such projects and members of the state legislature in California are exploring legislation to institutionalize such garden grants.

- *International linkages.* Many gardens are used to grow the traditional food of a variety of cultures. This emphasis on cultural diversity has led a number of programmes to establish international linkages for exchange of ideas, seeds and, hopefully, students. There are exciting opportunities for the established school gardens of the developed economies to partner with the developing world school gardens to support their growth. The National Gardening Association in the United States has perhaps the best database for global children's gardens and supports efforts to expand this network.
- *School grounds greening.* Many schools are attempting to recapture an element of the natural environment on their school grounds. Whatever the reason for the growing interest in school grounds greening, the garden seems to be one of the most practical strategies for achieving a more natural environment.

2.3.2 Developing economies

In the garden settings we investigated in developing economies, the production of food was often a key factor in the design of the educational programme. Growing food for the students and their families was an end in itself and a practical way of making school (and education) a valued asset in the community. Teaching the community how to grow their own food in an environmentally sound manner was also viewed as an important step toward sustainable development. The incorporation of fresh vegetables into the diet and learning about food safety points to garden-based learning as an effective tool for nutrition and health education.

In exploring garden-based learning in developing economies, we looked at programmes in Ethiopia, Brazil, Costa Rica, Cuba, India, Jamaica, Mexico and Micronesia. In general the programmes reflect the challenges faced by other facets of education and industry within these communities such as the lack of adequate physical resources and shortage of technical expertise. Both conditions could be significantly addressed by linking garden-based learning efforts in the developed and developing worlds. Despite these challenges there are amazing examples of garden-based learning occurring in developing economies.

In Ethiopia, the Selam Technical and Vocational Centre in Addis Ababa has a garden-based learning programme that deserves particular attention. Elementary and high school students are engaged in gardening on site. Selam also provides training and technical materials and support for other schools interested in garden development. The goals are focused on food production, vocational training and environmental education, but staff also see an increase in self-confidence and self-worth of the students. At the Selam school, students use garden products in two on-site restaurants open to the public. One restaurant features traditional Ethiopian cuisine and the other an international menu. Students are thus involved in all aspects of the food cycle from production through consumption and on to recycling. This is clearly a model that could contribute ideas to the movement in other countries where there is a trend toward using garden-based learning to teach the entire food cycle (e.g. California in the US).

Cuba is a country where education is highly valued and where garden-based learning is a part of the culture. In the words of one Cuban educator, the goal of Cuban education is “to create the most cultured children in the world.” The definition of cultured here includes an understanding and appreciation of the food cycle and its importance to the family, community and country. Children and others who work in the school gardens are seen as both a means to achieve food security and recipients of knowledge important to being a well-educated person. Among the values central to the school gardens is that students should learn and work. Expressed in another way: “Aprender con la mente Y con las manos” (learn both with the mind and hands). In cases where schools do not have adequate space for gardens, student will travel to nearby community gardens that serve as sites in which these children can learn and work. Youth Pioneros (or Pioneers) are a key component to Cuban education. This is the out-of-

school, non-formal programme in which a remarkable number of children (2 million) continue through secondary school. The Pioneros programmes are also operated at camps where students learn about nature, ecology and agriculture. In every case the garden is used as a learning/work site and is designed to establish the cultural value associated with working and learning. In this sense the use of the school garden in basic education contributes to reaching a prime objective of Cuban education – tying learning to work. The Pioneros programme also has interest circles composed of students, teachers and other collaborators. One example would be the Urban Agriculture Interest Circle. This group works in agricultural sites developing medicinal plant gardens, flower gardens and kitchen gardens. Some students have even produced a recipe book on medicinal plants, condiments and even wines. Thus in addition to producing food, leaning about nature and agricultural production, students test out recipes and also write and produce material for larger audiences, thereby linking garden work to more academic learning.

The future of garden-based learning in a more general sense is not easy to predict. One key element is the future of outdoor and environmental education. If the knowledge, appreciation and application of environmental education can be infused into the practice of working teachers and introduced into the preparation of new teachers, then it has an opportunity to become a mainstream practice within our educational framework. If the environmental education were to become a permanent fixture within the schooling framework (much as sports are currently viewed) then there might be a move to hire specially trained environmental educators (like athletic coaches) who will design and deliver the curriculum, which could easily include a garden. A similar relationship may evolve with experiential education or project-based learning (PBL). If this pedagogy becomes a mainstream educational practice, then gardens will certainly continue to expand as a vehicle to easily implement PBL at the pre-school and elementary levels.

Figure 2. Garden-based learning – global distribution – survey and study sites



2.4 Further considerations

The practice of garden-based learning is a global phenomenon. In some settings it is the educational curriculum and in others it supports or enriches the curriculum. The contributions to effective use of garden-based learning come equally from developing and developed economies. In the developed world the resources to support a garden of learning are often more readily available, however the practices, ideas and strategies being used in the developing economies can also make a significant contribution to garden-based learning.

There is no universal model of garden-based learning that can be applied to every community. Each culture or community must design a plan that addresses the needs of their learners and educators.

Garden-based learning applied while using the best practices can contribute to basic education in any society at several levels: academic performance, ecological literacy, school environment and culture, community linkages, nutrition and health and vocational education. The practice of garden-based learning like most pedagogy relies on some key concepts of instruction to be effective: hands-on learning and integrated, interdisciplinary instruction, etc. However it also makes a unique contribution not replicated in other pedagogies. It engages the student in a stewardship relationship with other living organisms and teaches not only the science of life but also the interconnected nature of the web of life and how everyday actions can have profound effects on the long-term health of the system. Garden-based learning can perhaps make its greatest contribution in both developed and developing economies by providing a path into ecological literacy and sustainable development that is otherwise blocked by the great urban migration and the even greater urban/consumer mentality that has crept into even the most rural communities on the globe. Garden-based learning can also create a greater sensitivity and appreciation for life and a deeper understanding of the interconnectedness of all living organisms.

Box 13. School garden programmes – strategies, evaluations and impacts

Garden-based learning programmes have gained popularity across the international educational landscape and there are innumerable programmes in both formal as well as informal education with myriad strategies and impacts.

Priscilla Logan, in “The why, what and how of outdoor classrooms”, listed four reasons for using gardens as a teaching method (Sealy, 2001):

- High retention rate – When children work in gardens 90 per cent of their experience is classified as hands-on. In a study conducted by Bethel Learning Institute on student retention, it was found that learning by doing produced 75 per cent retention rate as averse to 11 per cent for lectures;
- Empowerment – A connection to the earth gives students a sense of achievement and motivation;
- Academics – Science, maths, social studies, art, language and any other subject can be taught as life skills using nature as the learning lab, making these concepts more meaningful;
- Teamwork – Facilitating co-operation and communication in a real world setting rather than a classroom, makes learning teamwork possible, as does the class goal of a successful garden become more significant than individual achievement.

The Nutrition Education and Training Section of the California Department of Education (NET) states five ways in which garden enhanced nutrition education could contribute (Sealy, 2001) namely by:

- building bridges between school and community;
- promoting the transfer of information from one generation to another;
- developing environmental awareness in students by caring for a living environment;
- providing opportunities for cultural exchange;
- building life skills.

The developmental impacts of school gardens have, however, been difficult to evaluate and hence there are only few evaluations made in this area. The literature ranges from subjective accounts about the importance of gardens in the form of self-reports, parents’ and teachers’ observations as well as more empirical assessments of the impact of gardens.

The documented impacts of the programmes were:

- better performance on standardized achievement tests of reading, writing, maths, social studies and science;
- reduced classroom management and discipline problems;
- increased attention and enthusiasm for learning;
- greater pride and ownership of accomplishments.

Programmes such as Life Lab have created garden-based projects for learning science and connecting it to all areas of learning, their mission being to encourage respect for life and the environment, an appreciation and understanding of ecological systems and creating an environmental stewardship toward a goal of a sustainable future. The LASERS programme, a Monterey Bay Science Project (Stoddart, et al., 1999), aims to educate teachers in the use of a constructivist, inquiry-based approach to the teaching of science and language. Most of the partnership schools use the Life Lab Science based curriculum, which are carried out in a classroom grow lab or a school garden. Analyses of the data from the previous seven years of LASERS activities indicate that students who have been with LASERS-trained teachers for two consecutive years grow at a faster rate in language and maths when compared to students who have not been taught by LASERS-trained teachers.

Impact on academic achievement

In one well-evaluated study on experiential education, reported in *Closing the achievement gap: using the environment as an integrative context for learning* (Lieberman and Hoody, 1998), the State Education and Environment Roundtable, consisting of 12 states' education agencies, sought to identify successful environment-based educational programmes and conduct evaluations in various domain areas. The 40 successful programmes that use the EIC design, share the basic educational strategies of a multidisciplinary approach, hands-on learning experience, problem solving, team teaching, individualized design and an emphasis on developing knowledge, understanding and appreciation for the environment.

Impact on environmental education

According to the North Carolina Environmental Education Plan (1995), hands-on experiences are the best way for students to develop an understanding of their complex world and their place in it. The Down-to-Earth Programme (DTE) aims to provide this kind of learning with the help of school gardens as a knowledge building tool (Williamson and Smoak, 1999). The main purpose of the DTE programme is to introduce youth to sustainable agriculture and environmental education using the scientific

method as a conceptual and hands-on learning process that stresses critical thinking, reasoning and problem solving. The impact of the Down-to-Earth Programme has been seen through increased knowledge of the scientific method, plants, fertilizers and pests as well as positive attitudinal and behavioural changes, increased awareness and facilitation of higher-order thinking processes.

With similar goals of achieving an interdisciplinary approach to environmental education, Project Green incorporates the school garden and gardening activity into all disciplines, including maths, science, English, history, social studies and art (Skelly and Zajicek, 1998). An evaluation of the project comparing experimental and control groups found that children in the experimental group, who participated in the garden programme, had more positive environmental attitudes, with second graders showing higher scores than fourth graders. More specifically, it was found that the more outdoor related activities a child experienced, the more positive environmental score they possessed.

Impacts on families and communities

The Evergreen Elementary School in West Sacramento, California offered small garden plots to families who were non-English speaking immigrants, primarily from Hmong and Mien cultures, who rarely participated in their children's activities. A demonstration garden grew vegetables and other plants familiar to the Hmong and Mien participants, thus encouraging participation by the parents. This project raised the self-esteem of the children as well as the non-English speaking parents, who were then valued as teachers.

Hands-on involvement in children's designing, creating, caring for and using school nature areas can help improve children's academic performance as well as inculcate the willingness and capacity to work for the communities of which they are a part (Bell, 2001). Anne Bell also states that teachers are gaining an appreciation for the potential of school ground projects that integrate disciplines, produce tangible outcomes and encourage children to build ties with their communities. 'Lived experience' motivates students and shapes their learning in lasting and personally significant ways.

The Master Gardener Classroom Garden Project provides inner-city children in the San Antonio Independent School District with an experiential way of learning about horticulture, gardening, themselves and their relationships with their peers (Alexander, North and Hendren, 1995). The gardens are used as part of the curriculum as well as a reward for hard work during the day. An evaluation of this project indicated that there were many

positive effects of working in the garden. According to the researchers, the children had received lessons in moral development, enhanced their daily academic curriculum, gained pleasure from watching the products of their labour flourish and had a chance to increase interactions with their parents and other adults. In addition, the children learned the value of living things, plus the anger and frustration that occurs when things of value are harmed out of neglect or violence.

Impact on children's health and nutrition

School gardens have been used to teach children about nutrition and how to make healthier food choices (Lineberger and Zajiceck, 2000). In a garden project called Nutrition in the Garden, teachers were guided to integrate nutrition education as it relates to fruits and vegetables. Evaluations of students participating in the programme showed that their attitudes toward fruits and vegetables had become more favourable and they were also more likely to choose fruits or vegetable as snacks, compared to before they participated in the gardening programme.

In a garden project with similar goals described by Irene Canaris, the impacts of the garden have led to more benefits than the original aim of improving nutrition and nutritional awareness in children (Canaris, 1995). The gardening activities enhanced the quality and meaningfulness of their learning on a wider level, with children communicating with their communities and parents as well as learning mathematical and scientific principles in the garden.

School gardens have evolved through the ages, changing with the philosophies of our education systems and the values developed by various cultures. It seems reasonable to expect that our current ideals of educating children through experiential means, inculcating a sense of ecological awareness and connection with their land and recognizing the unique potential of every child, could be practically realized through the stable establishment of school gardens.

References

- Agarwell, S.; Hartwell, A.. 1998. *Childscope – an evaluation*. Ghana: UNICEF.
- Agnihotri, R.K.; Khanna, A.L.; Shukla, S.; Batra, P.; Sarangapani, P. 1994. *Prashika. Eklavya's innovative experiment in primary education*. Delhi, India: Ratna Sagar P. Ltd.
- Alexander, J.; North, M.W.; Hendren, D.K. 1995. "Master Garden Classroom Garden Project: an evaluation of the benefits to children". In: *Children's Environments*, 12(2), 256-263.
- Baker, V.J. 1989. "Education for its own sake: the relevance dimension in rural areas". In: *Comparative Education Review*, 33(4), 507-518.
- Barnett, E.; de Koning, K.; Francis, V. 1995. *Health and HIV/AIDS education in primary and secondary schools in Africa and Asia*. DFID Education Research Papers, Serial No. 14. London: DFID.
- Bassett, T. 1979. *Vacant lot cultivation: community gardening in America, 1893-1978*. Unpublished master's thesis, Department of Geography, University of California. Berkeley, CA: University of California, Division of Graduate Studies.
- Bell, A. 2001. "The pedagogical potential of school grounds". In: T. Grant and G. Littlejohn (Eds), *Greening school grounds. Creating habitats for learning*. New York: New Society Publishers.
- Black, H.; Govinda, R.; Kiragu, F.; Devine, M. 1993. *School improvement in the developing world: an evaluation of the Aga Khan Foundation Programme*. SCRE Research Report, No. 45; DFID Evaluation Report EV545. Scotland: The Scottish Council for Research in Education.
- Bude, U. 2000. "Who should be doing what in adapting the curriculum? The roles of various protagonists with particular focus on policy-makers, curriculum developers and teachers". In: UNESCO, *Globalisation and living together. The challenges for educational content in Asia*. Paris: UNESCO.
- Bude, U. (Ed.) 1993. *Culture and environment in primary education*. Bonn: DSE, ZED.

- Bude, U. 1985. *Primary schools, local community and development in Africa*. Baden-Baden: DSE.
- California State Department of Education and California Energy Commission. 1994. *Environmental education compendium for human communities*. Sacramento: State Department of Education.
- California State Department of Education. 2000. *California Student Assessment Project – The effects of environment based education on student achievement*. Sacramento: State Department of Education.
- Canaris, I. 1995. "Growing foods for growing minds: integrating gardening and nutrition education into the total curriculum". In: *Children's Environments*, 12(2), 264-270.
- Capra, F. 1997. *Web of life*. New York: Double Day.
- Carver, R. 1998. *Education for All: from experience, through guidance and reflection*. Doctoral dissertation. Stanford: Stanford University, Division of Education.
- Catacutan, D.C.; Colonia, G. 1999. *Landcare in school: the Lantapan experience*. Unpublished paper prepared for Farmers of the Future Strategy Meeting, ICRAF, Nairobi, October 1999.
- China Daily. 2001. "Rural students learn farming in school". In: *China Daily* 06/25/2001.
- Cobb, E. 1969. "The ecology of imagination in childhood". In P. Shepard and D. McKinley (Eds), *The subversive science: essays toward an ecology of man*. Boston: Houghton Mifflin.
- Colbert, V.; Chiappe, C.; Arboleda, J. 1993. "The New School Programme: more and better primary education for children in rural areas in Colombia". In: Lewin and Lockheed (Eds), *Schools in developing countries*. London: Falmer Press.
- Colclough, C.; Lewin, K. 1993. *Educating all the children: strategies for primary schooling in the South*. Oxford: Clarendon Press.
- Dewey, J. 1915. *Schools of tomorrow*. New York: E.P. Dutton.
- DFID. 2000. *Learning opportunities for all: a policy framework for education*. London: DFID.

- Disinger, J.F.; Monroe, M.C. 1994. *Defining environmental education. Workshop resource manual*. Report. Ann Arbor: University of Michigan.
- Edwards, C.P.; Gandini, L.; Forman, G.E. (Eds) 1993. *The hundred languages of children: the Reggio Emilia approach to Early Childhood Education*. Norwood: Ablex.
- Ekanayake, S.B. 1990. "Rural pedagogy: a grassroots approach to rural development". In: *Prospects*, XX(1), 115-128.
- Elstgeest, J. 1987. "Children and Agriculture". In: A.N. Rao, *Food, agriculture and education*. Oxford: Pergamon Press.
- FAO. 1997. *Issues and opportunities for agricultural education and training in the 1990s and beyond*. Rome: FAO.
- FAO. 2000. "From agriculture education to education for rural development and food security: All for Education and Food For All". In: *From production agriculture to rural development: challenges for higher education in the new millennium*. 5th European Conference on Higher Agricultural Education, University of Plymouth, U.K., 10-13 September 2000.
- FAO. 2001. *A compendium of FAO experience in basic education: Education and Food for All*. Rome: FAO.
- Froebel. 1998. *The education of man*. Retrieved January 20, 2002 from <http://members.tripod.com/~FroebelWeb/web7000.html>.
- Gardner, H. 1999. *Intelligence reframed*. New York: Basic Books.
- Gardner, H. 1983. *Frames of mind*. New York: Basic Books.
- Gasperini, L. 2000. *The Cuban education system: lessons and dilemmas. Country studies*. Education Reform and Management Publication Series. Vol. 1, No. 5, July 2000. Washington DC: World Bank.
- Goleman, D. 1995. *Emotional intelligence: why it can matter more than IQ*. New York: Bantam Books.
- Graham-Brown, S. 1991. *Education in the developing world*. London: Longman.
- Grieser, R.P. 1999. *Final Report: Green COM/Mali*. USAID.

- Harbison, R.W.; Hanushek, E.A. 1992. *Educational performance of the poor – lessons from rural northeast Brazil*. New York: Oxford University Press; World Bank.
- Hough, J.R. 1991. *Educational cost-benefit analysis*. London: DFID.
- ICRAF. 2002. *Concept note for the Farmers of the Future Initiative*. Nairobi: ICRAF.
- Institute of Curriculum Development and Research. 1993. “The role of culture and environment in curriculum development for primary education in Ethiopia”. In: U. Bude, *Culture and environment in primary education*. Bonn: ZED.
- Johnson, V.; Hill, J.; Ivan-Smith, E. 1995. *Listening to smaller voices: children in an environment of change*. London: ActionAid.
- Kandel, E.; Hawkins, R.D. 1992. The biological basis of learning and individuality. In: *Scientific American*, 267(3), 78-86.
- Katz, L. 1990. “Impressions of Reggio Emilia preschools”. In: *Young Children*, 45(6).
- Lieberman, G.A.; Hoody, L. 1998. *Closing the achievement gap: using the environment as an integrating context for learning*. San Diego: State Education and Environment Roundtable.
- Lineberger, S.E.; Zajicek, J. 2000. School gardens: can a hands-on teaching tool affect students’ attitudes and behaviors regarding fruit and vegetables? In: *Hortechology*, 10(3), 593-597.
- Lubben, F.; Campbell, B.; Dlamini, B. 1995. *In-service support for a technological approach to science education*. London: DFID.
- Marshall, M. 1998. *Improving teaching skills in Lao Cai: an approach. interim evaluation report of the Oxfam UK and Ireland Primary School Teacher Training Project in Lao Cai Province, Vietnam*. Hanoi: Oxfam UK and Ireland.
- Mattee, A.Z. 2001. *Agricultural education in Tanzania: past and present*. Paper given at a workshop on Farmers of the Future Initiative, ICRAF, Nairobi, 15-16 November 2001. Nairobi: ICRAF.
- Marturano, A. 1999. “The educational roots of garden-based instruction and contemporary gateways to gardening with children”. In: *Kindergarten Education: Theory, Research and Practice*, 4(1), 55-70.

- McDonough, M. H.; Wheeler, C.W. 1998. *Toward school and community collaboration in social forestry. Lessons from the Thai experience*. Washington: USAID.
- Ministry of Education and Higher Education, Sri Lanka. 2000. *Guidelines for the implementation of the Primary Education Reform*. Colombo: Ministry of Education and Higher Education.
- Mercado, A.; Laotoco, A.C.; Paduganao, R.; Paday, T. 1999. *Landcare in schools: building awareness and capacities of Farmers of the Future towards improving natural resource management*. Unpublished paper prepared for Farmers of the Future Strategy Meeting, ICRAF, Nairobi, October 1999.
- Meyer, E. 1997. *Cultivating change: a historical overview of the school garden movement*. Unpublished paper from graduate seminar on Social and Cultural Studies in Education. University of California, Davis.
- Montessori, M. 1969. *The absorbent mind*. (Translated from the Italian by C.A. Claremont.) New York: Dell Pub. Co.
- Moore, R.C. 1995. "Children gardening: first steps toward a sustainable future". In: *Children's Environments*, 12(2).
- Mulhall, A.; Taylor, P. 1997. *Contextualizing teaching and learning in rural primary schools: using agricultural experience*. Vol. II. London: DFID.
- Nabham, G.; Trimble, S. 1994. *The geography of childhood*. Boston: Beacon Press.
- Nachuk, S.; Fancy, K. 1997. *The way to school in Duyen Hai. Education issues for a Mekong Delta district*. Hanoi: Oxfam UK and Ireland.
- National Academy of Sciences. 1989. *Understanding agriculture: new directions for education*. Washington, DC: National Academy Press.
- Nguyen Thi Minh Phuong; Cao Thi Thang. 2000. "Vietnam. Curriculum planning, development and reform". In: *Globalisation and living together. The challenges for educational content in Asia*. Paris: UNESCO.
- Ogoye Ndegwa, C.; Abudho, D.; Aagard-Hansen, J. Forthcoming. "New learning in old organisations – children's participation in a school-

- based nutrition project in Western Kenya”. In: *Development and Practice*, 12(2-3), August 2002 (special issue on Organisational Learning).
- Orr, D.W. 1992. *Ecological literacy*. New York: State University of New York Press.
- Orr, D.W. 1994. *Earth In mind*. Washington, DC: Island Press.
- Penrose, P. 1997. *Cost sharing in education: public finance, school and household perspectives*. DFID Education Research Papers, Serial No. 27. London: DFID.
- Ravi, Y.; Rao, S. 1994. “The Andhra Pradesh Primary Education Project”. In: Little, A. Hoppers, W. Gardner, R. (Eds), *Beyond Jomtien: implementing Primary Education for All*. London: Macmillan Press Ltd.
- Riedmiller, S. 1994. “Primary school agriculture - What can it realistically achieve?” In: *Entwicklung Landlicher Raum* (3), 9-12.
- Riedmiller, S.; Mades, G. G. 1991. *Primary school agriculture in sub-Saharan Africa: policies and practices*. Eschborn, Germany: GTZ.
- Rilla, E.; D.J. Desmond 2000. *Connecting children to the land: a review of programs in agricultural literacy in California*. Oakland: University of California, Division of Agriculture and Natural Resources.
- Sealy, M.R. 2001. *A garden for children at Family Road Care Center*. Unpublished Master’s Thesis. Louisiana: Graduate faculty of Louisiana State University and Agricultural Mechanical College, School of Landscape Architecture.
- Seshadri, C. 1997. *Contextualization is alright but...* Unpublished paper presented to a Conference and Research Meeting: Contextualizing Teaching and Learning, 24-25 June 1997, AERDD, University of Reading, UK.
- Singh, B.R. 1988. *Cognitive styles, cultural pluralism and effective teaching and learning*, cited in Ekanayake, S.B. 1990. “Rural pedagogy: a grassroots approach to rural development”. In: *Prospects*, XX(1), 115-128.

- Skelly, S.M.; Zajiceck, J.M. 1998. "The effect of an interdisciplinary garden program in the environmental attitudes of elementary school students". In: *Hortechology*, 8(4), 579-583.
- Stoddart, T.; Canaday, D.; Clinton, M.; Erai, M.; Gasper, E.; Gershon, A.; Lasky, S.; Latzke, M.; Pinales, A.; Ponce, E.; Ryan, J. 1999. *Language acquisition through science inquiry*. Symposium presented at the annual meeting of the American Educational Association, Montreal, Canada. Santa Cruz: University of California, Santa Cruz.
- Taylor, P. 2000. "Improving forestry education through participatory curriculum development. A case study from Vietnam". In: *Journal of Agricultural Extension and Education*, 7(2), November, 93-104.
- Taylor, P.; Mulhall, A. 2001. "Linking learning environments through agricultural experience – enhancing the learning process in rural primary schools". In: *International Journal of Education and Development*, 21(2), March, 135-148.
- Taylor, P.; Mulhall, A. 1997. *Contextualizing teaching and learning in rural primary schools: using agricultural experience*, Vol. I. London: DFID.
- Trelstad, B. 1997. "Little machines in their gardens: a history of school gardens in America, 1891-1920". In: *Landscape Journal*, 16(2).
- Tuan, Y. 1978. "Children and the natural environment". In: Altman, I. and Wohlwill, J.F., (Eds), *Children and the Environment*. New York: Plenum Press.
- Uemura, M. 1999. *Community participation in education. What do we know?* Washington, DC: World Bank.
- UNESCO. 1996. *Education for All. Achieving the goal*. Working document. Paris: UNESCO.
- UNESCO. 1996 (2). *Education for All. Achieving the goal*. Statistical document. Paris: UNESCO.
- UNESCO. 2000. *The Dakar Framework for Action. Education for All: meeting our collective commitments*. Paris: UNESCO.
- Van Lierop, P. 1997. "Ecology education in primary schools". In: *ILEIA Newsletter*, 13(2), 26.

- Wanchai Seeha, 1992. *Factors affecting the primary schools' success in carrying on the education for rural development project in Changwat Loei*. Unpublished thesis, Thailand.
- Weatherford, E.; Weatherford, C.G. 1987. *A review of theory and research found in selected experiential education, life skill development, and 4-H Program impacts literature*. North Carolina State University, Extension Service; National 4-H Council.
- Williamson, R.; Smoak, E. 1999. Creating a down-to-earth approach to teaching science, math, and technology. In: *Journal of Extension*, 37(3).

Chapter IV

Strategies and institutions for promoting skills for rural development

David Atchoarena (Parts 1 and 3)
Ian Wallace and Kate Green (Part 2)
Candido Alberto Gomes (Part 4)

Introduction

In the recent past, renewed attention has been paid to investment in education as a means of fulfilling economic growth, full employment and social cohesion. This renewed interest is related to the deep transformation of national economies and labour markets, as well as in rural areas where off-farm employment is playing a growing role.

In addition to the sectoral transfer of labour away from agriculture production, globalization has far-reaching implications for occupational profiles. Addressing this transformation will require increased investment in education and training in order to raise productivity levels and equip vulnerable rural communities to cope with such change. In a fast changing and unpredictable environment, fostering flexibility relies on solid general education and on broad vocational skills which can be updated and completed through lifelong learning pathways.

While the debate on skills for rural development used to focus mainly on agriculture, the transformation of rural labour markets implies that delivery systems should become responsive to a wide range of economic activities such as agroindustries, craft production, tourism and other services. For this reason, the concept of a so-called *Agricultural Education and Training* (AET) system becomes largely obsolete. What is needed today is a much broader conception of *skills for rural development*. Consequently, the debate on vocational qualifications for employment in the rural economy has much in common with the overall reflection on the future of technical and vocational education and training in a global economy.

In developing countries the situation of agricultural education is often in a very poor state and many governments seem to have neglected their training institutions to concentrate on agriculture and rural development. Interestingly, many of the problems identified in the provision of training in agriculture are similar to those affecting technical and vocational education and training in general. This contextual convergence suggests approaching training policy issues in a broad perspective, cutting across specific economic sectors.

The review of experience shows that the reforms introduced in technical and vocational education and training already contribute to a renewal of skill development concepts and approaches for rural areas. While, to a large extent, providers in sub-Saharan Africa have been unresponsive to changing patterns of demand for trainees, a number of promising innovations have been identified. An important change in provision relates to the changing roles of public and private sectors. Not surprisingly, the analysis of the situation in Asia reveals great diversity. In East and South East Asia, the impact of the 1997 crisis, combined with the September 11 shock in 2001, have had deep and long-lasting effects on rural labour markets. In most countries skills training interventions have been significant components of governments responses. In a context where the supply of training for the rural areas is generally much more dense than in sub-Saharan Africa, much can be done to improve the design and management of skills provision and to strengthen the policy framework through which support and direction are channelled. Whilst the pressure for privatization is often strong, the direction explored in Brazil illustrates a original approach to combine market responsiveness with equity and poverty reduction concerns. In a policy area which has largely been disappointing, these examples provide the ingredients that may feed successful skill development strategies in rural areas.

1. Rural labour market challenges and training policy responses

1.1 The transformation of rural labour markets: the rise of non-farm employment

In most developed countries farm employment has been decreasing significantly over the years. The current trend is towards a rise in labour productivity, contributing to a decline in agricultural employment.

Furthermore, an increasing proportion of farm work is delegated to farm workers.

In OECD countries the number of farms has declined and the volume of labour allocated to farming has dropped significantly. In the US, for instance, the farm share of population fell from about 75 per cent in 1820 to 2 per cent in 1990. Furthermore, as growth in farm productivity accelerated in the twentieth century, the farm population decreased in absolute numbers after the 1930s. The US farm output more than doubled between 1948 and 1994, but with only 29 per cent as much labour.

Table 1. Agriculture employment as a percentage of total civilian employment in selected OECD countries

Countries	Average 1986-90 (%)	Average 1991-95 (%)	Average 1996-97 (%)
Austria	8.2	7.2	7.0
Belgium	2.8	2.5	2.4
Denmark	5.6	5.0	3.8
Finland	9.6	8.2	7.0
France	6.5	5.0	4.4
Germany ^a	3.9	3.6	3.2
Greece	26.2	21.3	20.3
Ireland	15.1	12.7	10.4
Italy	9.6	7.8	6.7
Luxemburg	3.7	1.8	n.a.
Netherlands	4.7	4.0	3.8
Portugal	19.9	12.4	12.8
Spain	13.6	9.8	8.4
Sweden	3.8	3.3	2.8
United Kingdom	2.2	2.1	1.9
EU-15	7.1	5.6	4.9
Australia	5.7	5.2	5.1
Canada	5.9	5.5	5.2
Iceland	12.1	9.7	8.8
Japan	7.9	6.1	5.4
New Zealand	10.4	10.4	8.8
Norway	6.6	5.4	4.9
United States	2.9	2.8	2.7
OECD-22	5.8	4.8	4.3
Czech Republic	12.0	7.8	6.0
Hungary	n.a.	n.a.	n.a.
Korea	20.7	14.7	11.3
Mexico	n.a.	25.3	23.3
Poland	n.a.	n.a.	21.2
Switzerland	5.7	3.6	4.6
Turkey	45.9	44.3	42.4

^a Unified Germany, since 1991.

n.a.: not available.

Source: OECD Labour force statistics. The agricultural sector includes not only agriculture, but also hunting, forestry and fishing.

In developing countries, the employment changes in the agriculture sector vary greatly, but in the long run, the capacity of agriculture to absorb labour surpluses is questionable. While in many countries, technological innovation is contributing to employment reduction in agriculture, many developing countries are not able to absorb the released workforce.

The transformation of rural labour markets has much to do with domestic and external macroeconomic pressures. In the context of globalization, the degree of vulnerability of agriculture and therefore of rural labour markets to international economic change is greater (see *Box 1*). In Mexico, for instance, trade liberalization associated with the removal of subsidies to agriculture had a significant impact on labour-migration, rural workers migrating to urban areas or to the US (Robinson, 1993).

Box 1. The impact of globalization on agriculture in emerging and transition economies¹ (ETEs)

Agriculture is much more important in income and employment terms in ETEs than it is in OECD countries. At the same time, agricultural trade barriers, export subsidies and domestic support in OECD countries have limited the potential benefits of free trade in agriculture for ETEs. High dependence on agriculture in ETEs and protectionist policies in OECD countries suggest that – as a group – ETEs have even more to gain from agricultural trade reform than OECD countries. (...) Trade reform in OECD countries are a precondition to successful development efforts.

Source: OECD documents.

However, macroeconomic developments influence farm households not only by affecting prices of agricultural commodities but by affecting employment opportunities in the non-farm sector. As a general trend, there is a greater prevalence of non-farm employment and pluri-activity among farm households and a correspondingly greater dependence on non-farm income. Traditionally, agriculture has been considered as the main sector for employment creation in rural areas. Hence, for many people, ‘rural’ and ‘agriculture’ are synonymous. Increasingly, policy makers realize that

1. Emerging and transition economies include transition economies in Central and Eastern Europe as well as large emerging economies such as China, India, Brazil and Indonesia.

the job creation potential of the farm sector is limited and that new sources of rural employment will be required in the future.

Already, available information shows that non-farm employment and income are significant in rural areas. It is estimated that in sub-Saharan Africa and Latin America about 40 to 45 per cent of average rural household income originates from non-farm activities. This share already represents around 30 to 40 per cent in South Asia (Start, 2001). In Bangladesh, a country where about 80 per cent of the population is rural, the relative size of the rural non-farm sector in the labour market is quite substantial and has been growing (*Table 2*). Similarly, the country experienced a corresponding increase in rural non-farm income. Further development of the non-farm rural activities is seen as an important strategy to reduce the incidence of rural poverty (Bakht and Shah, 1996).

Table 2. Agricultural and non-agricultural distribution of employed population by area of residence in Bangladesh, 1981-1991

(Population in millions; annual growth rate in % within parentheses^a)

Population by employment status	Rural areas		Rural & semi-urban areas		All areas (Bangladesh)	
	1981	1991	1981	1991	1981	1991
Employed population in:						
• Agriculture	14.2	15.9 (1.16)	14.7	16.7 (1.32)	14.8	17.0 (1.36)
• Non-agriculture	5.9	8.2 (3.36)	7.1	10.2 (3.70)	9.5	14.3 (4.16)
• Total	20.0	24.1 (1.84)	21.8	26.9 (2.15)	24.4	31.3 (2.53)
Total Population	75.6	89.0 (1.59)	81.3	98.7 (1.95)	98.9	111.5 (2.17)

^a The growth rates shown within parentheses are annual compound rates between 1981 and 1991.

Source: Mahmud, 1996.

Although the rise of the non-farm rural economy seems to be a global trend, the nature of the activities involved vary greatly from country to country, depending on the level of development (Start, 2001). In sub-Saharan Africa and South Asia, where rural poverty is widely spread, non-farm activities remain closely linked to agriculture and poorly related to the urban economy. Depending on the specificities of each zone, there is a tendency, notably in the poorest areas, to derive non-farm income from

migration to cities or abroad. In Latin America, where the rural people represents a lower share of the total population, light manufacturing is growing in rural areas within the framework of increasing urban/rural economic linkages. This pattern is even more prominent in East and South East Asia where the rural non-farm economy combines various types of agriculture related activities with more advanced forms of manufacturing.

Gender can also be an important determinant to analyze the rise of non-farm rural employment. Available data for Latin America indicate that, except for Bolivia, non-farm employment has become dominant for active rural women. In a recent study, off-farm work represented between 65 per cent and 93 per cent of women's employment in 9 countries out of 11 (Berdegue et al., 2000). On the contrary agriculture remained the major source of employment for rural men, with the sole exception of Costa Rica.

The effects of trade liberalization, agriculture policy reform and technological change on rural labour markets are also very different in rural areas with access to off-farm job opportunities and in remote rural regions. In poor rural areas with easy access to urban centres, it is expected that labour supplied by farm households to urban labour markets will increase.

These trends are related to changes in technology, in the demographic composition of farm households and in the relative economic return to farm labour. Typically, labour supply is influenced by several factors such as age, gender and education. Age and education are found to be among the most important determinants of off-farm work. The increasing educational attainment levels in rural areas can influence the allocation of labour resources. A higher level of education increases the endowment of human capital and therefore opens access to higher non-farm wages. In OECD countries, higher average education levels of farm women contributed to increasing female off-farm work (Rosenfeld, 1985).

In fact, increasing the level of education in the agriculture sector can produce opposite results on employment strategies. It is generally accepted that more education allows farmers to access and process information, allocate resources and adopt new technologies more effectively. By raising the farm earning capacity, this would suggest that education reduces farm exits. However, as indicated above, schooling also increases the opportunity for employment outside the sector and thus reduces the capacity of the agriculture sector to retain the most educated components of the workforce.

The distinction between specific and general education can clarify this relationship. While farm-specific training is likely to contribute to retain labour force in the agriculture sector, more general types of education may increase the probability of leaving the sector for non-farm employment (Weiss, 1996).

Empirical studies on the non-farm rural economy identify the entrepreneur's education level as a key determinant of enterprise survival (Bates, 1990). It is to be noted that besides schooling and training, work experience, also adding to human capital, can play an important role in the likelihood of off-farm work.

In a process of rural transformation, higher levels of education among the farm population and the availability of off-farm jobs facilitate the adjustment. In this context, a major concern is that non-farm activities can be difficult to access for the rural poor, partly due to their low level of education and training. Hence, education should be an entire part of support interventions aiming at developing economic activities beyond agriculture in rural areas.

Implications of the transformation of rural labour markets for skill development are critical since training for agriculture, as an explicit goal, is increasingly challenged by the need to prepare for non-farm employment as well as for coping strategies in a rapidly changing environment. However, the provision of technical skills is often not prepared to address the needs of rural labour markets.

Box 2. Rural employment and skills in sub-Saharan Africa

As is borne out by data on labour force structure (see table below), the agricultural sector is still, by far, Africa's most important employer. Except in South Africa (...) and in Nigeria, between two-thirds and four-fifths of the economically active population are dependent on the primary sector for work and income. Although shares are gradually declining in all countries, labour force growth is such that, in most countries, the rural labour force keeps growing in absolute numbers. By far, most of Africa's agricultural workers are self-employed or are unpaid family helpers on household farms; many of them produce exclusively for domestic consumption.

Labour force structure, by major economic sector, selected African countries, 1980 and 1997 (percentages)

Countries	Agriculture		Industry		Services	
	1980	1997	1980	1997	1980	1997
Dem. Republic of the Congo	72	66	12	14	16	20
Ethiopia	89	84	2	2	9	14
Ghana	62	58	13	13	25	29
Kenya	82	78	6	8	12	14
Madagascar	82	76	6	7	13	17
Mozambique	84	82	8	9	8	10
Nigeria	54	36	8	6	38	58
South Africa	17	11	35	30	48	59
Sudan	72	68	8	9	20	24
Tanzania	86	84	5	5	10	11
Uganda	87	83	4	5	9	12

Source: ILO, 1998: Table 3.

The important role of Africa's rural sector in economic growth, employment generation and poverty reduction, is not always readily recognized. For example, national training systems, admittedly small and ineffective, are almost everywhere focused on industrial and service occupations, as if skills were not of critical importance in agricultural and related activities.

Source: Fluitman, 2001.

Besides the trend towards industry specialization, in many countries rural areas become the host of new forms of tourism. In recent years increasing attention has been paid to pro-poor tourism initiatives (Cattarinich, 2001). Among the factors that influence the benefits to the poor from tourism, skills constitute a key determinant (*Table 3*). Therefore, targeted education and training programmes form an important component of strategies to enhance the economic participation of the poor in tourism enterprise.

Table 3. Potential key impacts of tourism on livelihoods in Namibia

Livelihood objectives/ concerns	Negative effects of tourism	Positive effects of tourism
<i>Fulfilment of needs</i>		
Cash	<ul style="list-style-type: none"> • Requires start-up investment 	<ul style="list-style-type: none"> • New earning opportunities from employment, casual sales, community contracts
Food	<ul style="list-style-type: none"> • Wildlife damage to agriculture • Lost access to veld foods 	<ul style="list-style-type: none"> • Food security via cash earnings of poor • Improved resource management
Physical security	<ul style="list-style-type: none"> • Disturbance of aggressive animals 	—
Cultural values	<ul style="list-style-type: none"> • Intrusion of Western cultural values • Commercialization of local culture 	<ul style="list-style-type: none"> • Spiritual value of wildlife • Revitalization of traditional skills/culture for tourism
<i>Accumulation of assets</i>		
Natural resources ^a	<ul style="list-style-type: none"> • Increased competition for RNR of tourism value • Loss of access to RNR in exclusive tourism areas • Exacerbated conflict with neighbours affects RNR negotiations 	<ul style="list-style-type: none"> • Enhanced collective management • Improved co-operation with neighbours affects RNR negotiation
Physical savings	—	<ul style="list-style-type: none"> • Investment of tourism earnings in livestock
Financial assets	—	<ul style="list-style-type: none"> • Long term: community equity in tourism
Social capital	<ul style="list-style-type: none"> • Local conflicts over control of tourism assets undermines social capital • Imposition of developments by outsiders 	<ul style="list-style-type: none"> • Empowerment • Stronger social organization for tourism management • Confidence to challenge government/outside • Recognition of the community from others (e.g. government planners) • And hence influence over external organizations and events
Human resources	—	<ul style="list-style-type: none"> • Training, skill development

Table 3. (continued)

Livelihood objectives/ concerns	Negative effects of tourism	Positive effects of tourism
<i>Strategies/priorities</i>		
Cope with drought	<ul style="list-style-type: none"> • Competition for drought resources (grazing, veld foods) 	<ul style="list-style-type: none"> • Income continues in drought • Collective income earned for drought-coping • Decreased vulnerability
Diversity	—	<ul style="list-style-type: none"> • An additional livelihood opportunity
Minimize risk	<ul style="list-style-type: none"> • Risk: investment may fail; tourism may slump 	—
Maintain adaptability and flexibility	<ul style="list-style-type: none"> • Earnings are lagged, requires high initial inputs: not flexible 	—

^a RNR = renewable natural resources.

Source: Cattarinich, 2001.

1.2 The provision of technical and vocational education and training in rural areas: issues and trends

The transformation of rural labour markets implies that delivery systems should be relevant to the needs of rural people engaged in a wide range of economic activities including agriculture but also industrial activities, tourism and other services. The specialized literature often uses the term agricultural education and training (AET) system to describe the various delivery structures providing skills for agriculture and rural development. Spedding (1979) defines a system as *a group of interacting components operating together for a common purpose, capable of reacting as a whole to external stimuli; it is unaffected directly by its own outputs and has a specific boundary based on the inclusion of all significant feedbacks*. In reality, in most countries such a system does not exist for providing agricultural education and training. Skills for rural labour markets are offered by a great diversity of public and private providers. Within the public sector, institutions are in most cases affiliated to various ministries and government agencies, often without clear overall co-ordination. For this reasons, the term AET system is not used here. This semantic choice is also consistent with the rise of non-farm employment and therefore the need to expand the traditional concept of agricultural education to a broader approach of skills for rural development.

In most developing countries agricultural education has been attracting critics. Excessive focus on public sector jobs and on farm employment, lack of consideration for new areas such as environment and natural resources management, biotechnology or agribusiness are some of the limitations often mentioned.

The rehabilitation of skills provision for rural areas can find useful resources in the broader debate on technical and vocational education and training. In fact many of the rigidities that constrain training in agriculture are also present in the broader technical and vocational education system. Beyond agriculture and rural development, training policies are considered critical to meet the challenges of knowledge- and skills-based societies (ILO, 2002).

In recent years technical and vocational education and training seemed to re-emerge as one of the hot topics in the policy debate on educational development. This increasing attention being paid to skill issues was clearly expressed at the UNESCO International Congress that took place in Seoul, Korea, in 1999. This focus is also clear when looking at recent education policy documents issued by OECD and the European Commission.

To a large extent, this renewed interest is motivated by the necessity to address new economic challenges. Globalization and the need to maintain, through skill development, international competitiveness appear as the strongest force. Associated with globalization is the deep transformation of labour markets, including in rural areas and the need to adjust training systems and policies accordingly.

Today the reforms introduced in technical and vocational education and training already contribute to a renewal of skill development concepts and approaches for rural areas. To some extent the innovations introduced in agricultural education have sometimes also contributed to inspire broader training reforms. The following examples related to critical policy issues clearly illustrate these trends. Then, a review of experiences in selected countries in sub-Saharan Africa, in Asia and in Latin America will further document the skill challenge in rural areas and provide information on directions currently explored to conduct the reform.

The rapid and deep transformation of jobs and skills is probably the most powerful motivation to change training provision. A lot of attention has been given to the occupational transformation in industry, as a result of both changing work organization and new technologies. Yet, this process

also affects the agriculture sector as reflected in the case of technical foresters.

Box 3. Old job, new skills: the ‘new’ technical foresters

The need for ‘re-orientation’ courses for traditionally trained foresters is evident in recent forestry writing. It is discussed both by policy-makers and forestry practitioners. Foresters will always need their professional forestry expertise, although competences within this may change over time. Agroforestry and the growing of trees partly for non-timber forestry products are examples of this. However, it is their changed relationships with the public which is the new element of their work. Originally qualified to deal with trees, foresters increasingly find they are expected to deal mainly with people. This demands good communication skills – of listening and understanding – as well as just giving out knowledge and advice. Often the communication is with groups of people rather than individuals. Negotiations may be with less educated rural people (including the landless, women and other less powerful groups), not only with fellow professionals who speak the same educated language.

Foresters therefore need to develop the skills of approaching such people – potential tree growers – understanding their situation and helping them to meet their varied needs within their farming systems. In doing this very different work, foresters may sometimes have to put on one side some of the precise technical rules in which they were originally trained.

Source: Smith, 1994.

Renewing modes of delivery has also been a major challenge for training reform. In this respect a central concern is to consolidate linkages between employers and providers. It is worth noting that rural trainers have had a long experience in this field. The pedagogy of alternance training in rural areas was first developed in France in the 1930s within the so-called *Maisons familiales et rurales*². The main objective of these institutions was to train farmers that would stay in their community and continue to work on the family farm. While secondary schools in rural areas had a very conservative approach, establishing a clear separation between education and the world of work, the MFR, through the practice of alternance seek to create a positive interaction between learning and working. Over the years this concept was experimented with in many other

2. For more information on the *Maisons familiales et rurales*, see: <http://www.mfr.asso.fr>.

countries in an attempt to establish linkages between education and agricultural work. Through various modalities, including apprenticeship, linking education and work experience constitutes today, beyond the agriculture sector, a major component of most vocational education reforms.

Box 4. Education centres for total production – Argentina

Until 1988, work-study teaching had developed in the private sector; however, in that year, the *Programa Centros Educativos para la Producción Total* (programme of education centres for total production) was established within the public sector. It was designed to meet the demand coming from some communities in the province of Buenos Aires and involved experimental co-management between the federal government and small rural communities.

The centres for total production (CEPT) now number 120 in the different rural areas of Buenos Aires province.

Taking part in the joint management are the General Department for Culture and Education and the communities concerned, represented by their *Consejo de Administración* (governing board) the members of which are elected from among pupils' parents, representatives of the area school board and non-official bodies representative of the various fields of activity (economic, cultural, social, etc.).

The activities of the governing board include the representation of the school vis-à-vis official agencies, teacher evaluation, managing finances, the purchase of teaching aids, improvements to school buildings, the organization of events and so on. Its duties are not only administrative but also entail the monitoring and control of the teaching-learning process and educational activities.

More recently, Local Development Committees have been created and are comprised of community representatives, school graduates and teachers. Their purpose is to spur operations aimed at improving local families' quality of life, not only as part of the community but also financially and culturally. To prompt local development, CEPTs must work as one with other agencies of the zone such as the municipal council, business, co-operatives and other schools.

Source: Neiman, 2001.

Finding better ways, besides formal provision, of combating poverty is a highest priority in many countries. Designing community-based responses, linking training provision to basic needs and to local development

initiatives constitutes a much needed approach in rural areas. One promising example in relation to poverty alleviation and employment promotion is the vocational training programme for youth employment which was implemented in collaboration with ILO, through a technical co-operation project (POCET) in Honduras. This initiative resulted in an improved level of income-generating activities for young people in covered rural areas. The lessons of this experience are being disseminated to other countries, including Guatemala and El Salvador.

Box 5. Education for work in poor rural areas – Honduras

(...)

Like all development projects, the Education for Work Project (POCET) aimed to improve the standard of living of the poorest, in this case a large part of the population of isolated rural settlements in its region of operation in Honduras.

(...)

The Education for Work project (...) in Comayagua (...) which existed (...) from 1990 to 1996, attempted to overcome the deficiencies of earlier projects. It aimed to do so by providing an alternative whose methodological conception would encourage change by integrating, as far as possible, the educational components of instrumental education (literacy and basic formation) within those of vocational education while linking them to initiatives in the areas of production and services. This was achieved by developing productive initiatives (projects for the production of goods or services) and the creation of diverse forms of associations, including communal and intercommunity production associations, without excluding the possibility of direct insertion in the market and dependent employment.

A correlation between levels of education, vocational training, production, productivity and people's incomes has been demonstrated. It is thus argued that gains in productivity that cannot be attributed only to growth variables, such as labour and capital factors, have their origin in the growing productive capacity that education, vocational training and organization provide.

It can therefore be concluded that these factors are a form of investment in people because they generate results in terms of individual and collective production and thus generate income. Raising the knowledge and skills of a person of working age, as a form of capital, can improve their well-being since improving their organization, production and productivity allows them greater returns from their activities and thus a higher income and in general a higher level of social and economic development.

Source: Ooijens et al. 2000.

Beyond the contribution of training to poverty reduction through community linkages, the response of technical and vocational education to social and economic change requires creating new forms of co-operation and partnership with the labour market. In addition to macro-level policy initiatives to cross traditional borders of responsibilities between stakeholders, a major challenge lies with the motivation and capacity of institutions to enter new fields. If traditional vocational schools are mainly concerned with delivery, they increasingly need to engage in various forms of collaboration with employers to provide company-based training and job placement services to students and also to offer continuing education and other types of support to enterprises.

Box 6. Building school/enterprise partnership: Narrogin Agricultural College – Australia

Narrogin Agricultural College is a residential year 11 and 12 school supported jointly by the Education Department of Western Australia (WA) and the Department of Agriculture. It is one of six agricultural schools in WA and has a long history of success in providing students with a well-rounded education as well as skills to proceed directly into the primary industry work force or to higher education studies in agriculture. As well as running a commercial dryland farm the school is gradually increasing its provision of short courses and field days to meet industry demands.

During 1995 the College was approached by the Farm Machinery Dealers Association (FMDA) to discuss an ongoing problem of a lack of qualified people in rural Western Australia to sell and service specialized agricultural equipment. The FMDA was attracted to Narrogin because of its reputation in producing practical graduates with a range of farm and engineering skills.

Many FMDA members operate combined dealerships in farm machinery, heavy equipment and cars and trucks, which require skills in sales, parts, yard assembly and field servicing. Demand for these skills was said to be high, with the industry having the capacity to absorb up to 15 or 16 graduates annually from the proposed course. Given the range of products sold and serviced by FMDA members any proposed entry level training programme would have to be broad based and include a mix of industry skills and general education. The FMDA also suggested that training programme design should allow students a choice of pathways at course completion for entry into a range of apprenticeships relevant to the farm machinery industry needs.

The College responded to the FDMA by investigating the design parameters for such a course. The course design process commenced in early 1996 with the intent of beginning the course at the start of 1997.

The FDMA course is a two-year full time course designed for youths exiting year 10 with no immediate goal of proceeding to full-time tertiary education. During each year students are required to complete four weeks of structured workplace learning arranged in two-week blocks. On completion of the course FDMA members will offer to graduates entry to apprenticeships with advanced standing. Already a number of enterprises have made firm job offers for students to commence with them at the end of their year 11 studies.

In responding to the industry demand for this type of course the school has found that while industry supports the work placement part of the course through its members, it has relied on the school to undertake the design, implementation and resourcing of the programme.

Source: Malley, undated.

Financing is obviously a critical dimension of any policy for skill development in rural areas. The discussion on funding skill development and financing principles is not a new debate. A large body of literature is dedicated to both the rationale of funding and on specific financing mechanisms.

Exploring new financing arrangements for skills development is often seen as an imperative because governments are not able, or not prepared, to provide all the additional resources required to expand and improve the national skills base. This calls for more resources in addition to public funds and for a more effective utilization of the resources.

According to the economic rationale, those who benefit from training should pay for it. In many countries, pre-employment, initial and institution-based training is still considered to be a government responsibility, while financing of continuing training and education is left to the social partners.

In reality policies are trapped in a situation where extra resources are needed but public expenditure is restricted. In most developing countries, governments are unable to provide the required resources for skills development. Moreover, in the post-Dakar Education for All framework,

government resources for education are directed on priority to basic education.

Increasingly, funding for vocational education and training is based on tripartite mechanisms, which include government, individuals and employers. In countries where decentralization processes are progressing, local governments are providing resources for training and skills development. However, little data are available on the sharing pattern in individual countries, even with regard to pre-employment vocational training.

By and large, governments retain primary responsibility to promote and co-finance skills development. Frequently this includes creating incentives for employers and for individuals to invest more in skills development. The current trend emphasizes the role of employers and individuals in contributing to the costs of skills development. The concept of funding partnerships illustrates this approach. It is often concretized by the establishment of training funds typically funded by a payroll tax. While the application of this mechanism to training for rural areas is still rare, the experience of Brazil, presented at the end of this chapter, provides an interesting example.

It is important to stress the fact that this trend towards increasing employers' contributions is not purely a financial issue. The aim is not only to mobilize additional resources, but also to increase the overall involvement of employers in steering and delivery mechanisms for training. Such an increased involvement is expected to improve the quality of training delivery and to align training supply with the requirements of employment. Hence, financing of skills development is very much linked to the issues of responsiveness to market needs, to adaptation and relevance of training.

Besides concerns of relevance and effectiveness, alleviating poverty requires that more money be spent in favour of the most vulnerable groups of the population, often located in rural areas, where the experience shows that the private sector is poorly interested in investing. On grounds of equity, there is a strong case to redirect expenditures where social problems are the most difficult. More creativity is also required to design innovative funding schemes for financing, in a sustainable way, access to training for the poor. Recent initiatives undertaken to support training for farmers point out new directions that deserve further exploration.

Box 7. Sustainable funding for farmer field schools

New methods of sustainable funding for farmer field schools are emerging due to the crisis in extension services in the developing world. Indeed, a main concern for funding extension revolves around the issue of fiscal sustainability of extension activities – that is how extension and research services will be able to maintain operational activities in the field without significant external support.

Under a few new initiatives, privatization is being strongly promoted as a method to fund extension. Although private consultants currently work in high value crops in all countries, it is difficult to see how resource-poor farmers in developing countries, who do not have their own funds nor the benefits of heavily subsidized production and marketing systems, will be able to afford private payment for all services. Nor is it obvious how rural people will have access to information on other agriculturally related issues such as HIV/AIDS, women's reproductive health, nutrition and environmental management that are of wide social concern but often not of immediate household concern, especially when many rural families have never heard of these issues or where women are economically powerless.

Besides privatization and private sector promotion, publicly funded extension for the rural poor will also exist for the foreseeable future. This system, however, must be responsive to building people, independent community organizations and economic growth that will contribute to financing in the long run.

A new process started in 1999, in East Africa, leading to the development of self-financed Integrated Production and Pest Management (IPPM) field schools in Kenya, Uganda and in Zimbabwe. The first step is for a local sponsoring group or newly formed group to submit a grant proposal. Typically, grant support is a combination of materials and cash. The size of the grant is US\$100 to \$400 per season of study. Direct payments to field school facilitators are made by the field school at pre-agreed upon rates. It is the responsibility of the facilitator to provide a profitable educational activity including bringing in socially important issues such as HIV/AIDS, women's reproductive health, soil fertility management, etc. Proceeds from the field school plots are re-invested in the group's own account. The funds are used by the group for further study, purchase of animals or other activities. Each group is also requested to assist in training one other group and farmer-led field schools are quite successful.

As a result of this grant process, groups have shown a very high level of ownership of the field school process and many field schools enjoy a high

level of matching funds, material inputs provided by the community and participants and an increasing ability to manage funds and activities on their own. Groups become independent of extension while extension has better partners. The process of grants also allows groups to organize themselves to continue on their own. Many field school participants go on to develop longer-term associations due to their cohesion, trust and joint funding raising ability. The grants capitalize groups and catalyze new ways of working together. It is envisaged to connect IPPM education to the UNESCO-led *Education for All* programme.

Source: Gallagher, 2001.

Beyond investment in human capital, it is increasingly felt that social capital plays an important role in economic performance as well as in the capacity of individuals and communities to adjust to new environments. Change is sometimes described as a cumulative process using existing knowledge through interactive learning. In turn, these interactions build new knowledge.

Effective learning processes are expected to contribute to social capital formation. While this rationale has mainly been explored at the macro and enterprise levels, learning processes and social capital also serve local development. Recent research tries to document how rural communities build social capital through learning.

Box 8. Social capital: an asset to cope with change in rural areas – Australia

Learning, social capital and change are inter-linked. At the micro level of interactions, social capital in the form of knowledge resources and identity resources oils the process of change to enhance outcomes. The process of change in a community is a learning process, which simultaneously draws on and builds social capital.

Knowledge resources encompass knowledge of the skills, knowledge and affective attributes (including values) of others in the community and outside the community; and the common physical resources of the community including aspects of place, formal and informal networks, internal and external resources. *Identity resources* are identifying oneself and others, inside and outside the community, as being willing to act spontaneously or on request.

Knowledge resources allow community members to combine their skills and knowledge (human capital) with the knowledge and skills of others. Identity resources allow community members to feel confident that other community members will act to share information, advice or access to a physical resource if it is sought. The very process of community learning requires direct interaction with other people. The interactions of talking with each other, watching each others' behaviour, learning from shared experiences, the sharing action of offering support and help in completing a task, can all build knowledge and identity resources. Learning occurs not only through a sharing of resources, but also as community members reconstruct their identities and the identities of others and extend their knowledge resources during interactions which use social capital. Thus social capital is dynamic and is both used and built through learning processes.

It can be said that social capital is dependent on the existence of numbers of meaningful interactions. Given that social capital can only be built in actual interactions, then a precondition to building social capital is the existence of *sufficient numbers of interactions of a particular quality*. Both quantity and quality of interactions therefore have a role in the development of social capital.

Qualitative elements of interactions include externality, reciprocity, trust and at least some shared norms/values. Shared language, shared experiences, trust, personal development and an identification with the community help build knowledge and identity resources and thus improve the quality of learning interactions.

The informal learning which takes place as community projects are planned and implemented can build a community's capacity to survive in the harsh economic climate facing rural Australia in the late 1990s. Capacity to survive and even thrive comes through building social capital and with it the capacity to share knowledge, skills and resources for the benefit of the community.

Source: Kilpatrick, Falk and Harrison, undated.

2. Skills for agriculture and food security in sub-Saharan Africa

2.1 *The context*

In sub-Saharan Africa, the role of the government in the provision of agricultural services has been increasingly questioned in recent years, due

to growing dissatisfaction with its performance (in terms of quality, efficiency and coverage), fiscal pressures on governments' budgets, structural adjustment programmes (SAPs) and growing desires to participate from the private sector, including the NGOs. Under SAPs, parastatal marketing boards were often dismantled and private traders encouraged to step in and fill the gap. This left farmers with a more unpredictable market environment, widely varying producer prices, rapidly increasing input prices (as subsidies were removed) and insecure input supplies. Set against this market, margins have tended to fall as competition has entered the market place and, for some at least, deregulation has provided new productive opportunities and niche markets. Combined with these factors, farmers' daily cash requirements generally increased under SAPs, as subsidies were reduced from education and health services as well as from agricultural support services and inputs. Inflation has also led to higher prices for agricultural inputs and food purchases. Such factors have often forced farmers to diversify, thus reallocating land and labour to non-agricultural activities and many small farmers have been forced to sell or rent out their land and to go into non-agricultural activities or become agricultural wage labourers.

Beyond market pressures and institutional changes, the context in which training issues take place in rural areas is related to deeper demographic, environmental and economic factors. The productivity issue is clearly an important concern, although not the only one, to improve training investment in agriculture.

Box 9. The productivity challenges

Space and natural resources are being put under great pressure by the *increase in population*. Until recently, soil fertility was managed by production systems based on letting the land naturally lie fallow for long spells. Rising demographic density, caused by population growth, has made such systems obsolete. Since they produce less per unit area, farmers tend to either increase the area under cultivation, hence shortening the time for which land lies fallow; or they move to more sparsely populated areas, which in turn become more heavily populated. These were only stopgap measures to stall the inescapable obsolescence of a fertility-management system which was less and less appropriate. **The long-term enhancement of soil fertility is of the utmost importance to agriculture.**

Urban growth comes with a new spatial and economic distribution of the population. For example, in 1960 for every person living in urban areas in Sahelian countries, ten lived in rural regions. Today, the ratio is 1:2.4 and by 2020 it will be 1:1. Every farmer would have to increase surplus production fivefold in order to maintain the original level of food self-sufficiency. Considering projected urban-population growth, this surplus would have to be increased further in the next twenty years; so the increase would be almost tenfold in 70 years. **The long-term enhancement of the productivity of agricultural work is the second most important factor.**

Increased productivity of soil and labour would also heighten the need for greater use of agricultural machinery, larger herds, seed selection and (if necessary) chemical inputs - all of which would require extra funding. Additional capital can only be found if farmers can ensure greater profitability: at the moment it is more profitable to invest in a taxi (powered by a motorcycle) or a house than in the agricultural sector. **This third ramification, namely the productivity of agricultural capital, requires the development of a farmers' organization capable of defending the rights of primary producers.**

Source: Debouvry, 1998.

Related to the question of public-private division of responsibilities, there is a growing trend towards pluralism in the provision of agricultural services, with government organizations, NGOs, private companies, semi-autonomous organizations and rural people's organizations all becoming involved. This situation greatly increases the need for adequate co-ordination among the different types of providers, if their services are to be provided in a rational, coherent, appropriate and cost-effective manner. One of the outcomes for education has been the 'down-sizing' of the state services, in favour of more private provision. Training institutions set up by government ministries, mainly to provide personnel for their own services (e.g. field level extension workers in agriculture, forestry, fisheries, etc.) have been faced with a declining demand for their normal 'products' and have now had to adapt to very different demand patterns, if they are to survive at all.

2.2 An historical perspective

The provision of agricultural education in sub-Saharan Africa (SSA) must be placed in an historical perspective. Both the late colonial and post-independence periods saw considerable efforts at 'institution building'

at all levels of provision. By the late 1970s disillusionment had set in, with the realization that this would need to be a very long term process if results were to be successful and that progress was much hampered by the lack of clear policies for vocational education and training in agriculture and poor co-ordination amongst the various donor agencies (Wallace et al., 1996).

Box 10. Milestones in the development of agricultural education – Senegal

From 1910 through 1947, to 1960 (that is, prior to independence), the training system designed for the colonial agricultural economy was based on a number of structures. These included the apprenticeship centre in Louga, the Institute of Tropical Veterinary Medicine (l'Institut de médecine vétérinaire exotique) and the School of Animal Husbandry (l'École des infirmiers d'élevage).

Along with these technical training structures, the colonial administration also established the concept of **rural schools**. Their purpose was to give practical training to farmers' sons, enabling them to help their parents effectively in the running of the family farm.

One striking feature of this period was the lack of forestry-training centres.

From 1960 to 1970 was Senegal's first ten years of independence. The need was felt to train competent local people to replace the colonial skilled workers and experts who left these countries after independence. Therefore, several technical training schools were created: the *École nationale des cadres ruraux* (ENCR), the *École nationale d'économie appliquée* (ENEA), the *Écoles d'agents techniques* (EAT), the *Centres de perfectionnement des artisans ruraux* (CPAR), the *École nationale des monitrices d'économie familiale rurale* (EMEFR) and the *Centres d'initiation horticole au niveau des régions du pays* (CIH).

Though much has been done since independence to back agricultural development policies with technical agricultural instruction, the training of primary producers has never been given its rightful importance in the qualification system of rural stakeholders. This situation is partly due to approach to agricultural policies which has always sidelined training in development strategies. To date, most economic players in Senegal's rural areas are illiterate and technically limited since they have had very little training or access to information. In addition, the very few training centres cannot meet demand. Most of them face serious difficulties due to a lack of human, financial and material resources.

Source: Balizet, 2001.

The demand side was characterized by perceptions of the low status of agriculture and of rural life in general, frequently leading to the recruitment of candidates who were academically weak and who, in the final analysis, were often “*poorly motivated towards rural life and work, with harmful knock-on effects on the quality and commitment of agricultural graduates*” (Wallace et al., 1996: Annex 2-3).

The challenges facing the whole training system are enormous and require major adjustments in every aspect of its structure and functioning. Van Crowder et al. (1998) lament the fact that improving the poor training of agricultural professionals has not been seen as a priority in the past and point out that the agricultural sector in many developing countries requires major changes due to technological advances and economic pressures, demanding greater market emphasis, competitiveness and productivity.

To some extent, the provision of skills for agriculture and rural development combines the general problems faced by technical and vocational education and training with the specific issues related to agriculture education. One of the most profound factors is the widespread lack of any coherent policy framework for skill development in agriculture. In addition to this policy gap, the fragmentation of the delivery system hampers the reform process.

In most of the countries in SSA, several government ministries are responsible for different components of the system. Typically, responsibility for the universities and for primary and secondary schooling, as well as teacher training, fall under the Ministry of Education, whilst middle level agricultural colleges and farmer training programmes come under a Ministry of Agriculture (or something similar). Other natural resources (NR) ministries (e.g., forestry, fisheries, wildlife) – when separated from the Ministry of Agriculture – may run their own, separate, staff training colleges and non-formal programmes. In some countries vocational training offered to rural youth may fall under yet another ministry, whilst training for rural women is often under yet another. In addition to government-run programmes, many NGOs are typically involved in isolated components of agriculture education, mainly at the micro-level in non-formal education or some form of vocational training. This picture is further complicated by the frequent lack of co-ordination between beneficiary governments and the donor agencies that support delivery programmes. These frequently also fail to co-ordinate policies and actions amongst themselves, thus tending to ineffectiveness in support of specific programmes.

Elitist attitudes amongst senior academics, researchers and extensionists towards each other, also contributed to the general isolation and specialization of public sector institutions involved in agriculture: the extension services, research organizations and training institutions (Wallace et al., 1996). The compartmentalized, bureaucratic administration of the different institutions did not permit flexibility and denied the need for integration and multidisciplinary approaches. The lack of linkages seriously diminished information feedback from rural communities; whilst lack of collaborative efforts in planning and execution between research and educational institutions hampered the alignment of national policies for agriculture and the development of strong research interests among teaching staff. The pursuit of research agendas was also hampered by rigid organization and management within educational institutions (FAO, 1993).

Recent reports by Kwarteng et al. (1997), Mongbo and Hakutangwi (1997), Fremy 2000, Maguire (2000a) include a catalogue of recurring problems and constraints throughout SSA:

- financial problems (mainly in terms of inadequate resourcing);
- low staff motivation;
- negative attitudes of trainees towards agriculture;
- donor insensitivity to the real needs of the beneficiaries;
- low levels of training of most field level staff;
- lack of a systematic progression of agricultural education across levels;
- a lack of short courses for extension staff or farmers;
- gender imbalance in access to skill provision;
- a focus restricted to the technical aspects of agriculture;
- lack of communication with employers of the graduates; ‘inbreeding’ due to employment of graduates in their own institutions³;
- mediocre working conditions for teaching staff and students;
- out-of-date teaching materials and farm equipment.

It is worth noting that most of these issues are shared with the overall technical and vocational education and training system. In summary, Fremy (2000: 3) states that “*Governments and donors had seldom given top priority to building the conditions for long-term development and management of human resources in the agricultural and rural development sector*”.

3. “...thereby excluding the entry of new ideas from the wider world of academia and research” (Maguire, 2000a: 2).

Skill development for agriculture in SSA operates within an environment of widespread poverty, food insecurity and low household sustainability, as well as one of rapid socio-economic and technological changes at global, national and local levels. Beyond agriculture, there is widespread recognition of the key role that agriculture education should play towards poverty reduction (Van Crowder et al., 1998: 1). Furthermore, education and training are required to enable people's full participation in community, national and global development (USAID, undated). Maguire (2000b) argues that agricultural education institutes must now recognize that, in order to remain relevant, they must play an active and locally relevant development role, as well as an educational one.

2.3 Emerging needs in sub-Saharan Africa: changing demands for skills and competencies in the rural sector

The background outlined above provides a picture of a rural environment that is in a state of deep and multifaceted changes. Agriculture education in SSA is '*at the crossroads*' (Wallace, 1997b). Financial constraints are severe, but the demands for better quality and more relevant agricultural education are high. Major global trends affecting the sector include globalization, decentralization, privatization, including cost-recovery and the contracting out of services. HIV/AIDS, the rise in biotechnology and rapid urbanization also represent critical challenges (Qamar, 2000; Maguire, 2000b). Rivera (2000) cites, as a problem, the '*commodification*' of agricultural information, i.e. knowledge is becoming a marketable good to be bought and sold and the provision of agricultural knowledge is increasingly subject to payment of a fee.

Gasparini (2000) has suggested that agricultural education and training have been removed from the market place and from the rest of the education system and as such have witnessed the growing irrelevance of education and training curricula, decreases in educational quality, the unemployment of agricultural graduates and consequently reduced investment support. Graduates from formal, pre-service training programmes are no longer automatically guaranteed a job in the public sector. The private sector demands students with different types of skills and knowledge. There is also a pressing need to widen access to education and training for women.

Wallace and Nilsson (1997) noted that, despite some efforts to integrate women into agriculture education programmes, the longstanding

male bias still remained and women continued to be neglected or underrepresented in agricultural subjects other than home economics. There was a great need to train and recruit more women into agricultural extension and to realign training curricula, by inclusion of gender sensitivity, gender analysis and planning. There was also a need to involve women participants in the process of curriculum review.

In the future, agricultural professionals must be equipped to gain employment across the range of organizations involved and hence the demand for a much more diverse mix of knowledge skills and competencies than in the past. Current experience and literature confirms the widespread and urgent necessity of reforming curricula at all levels.

Wallace et al (1996) characterized agricultural education curricula in SSA as being “*stable, but generally irrelevant, based largely in the past experience of curriculum planners and lacking in dynamic adaptation*” (Wallace et al., 1996: 16). They highlighted the need for integration of different levels of curricula to facilitate progression upwards through the educational system; for the inclusion of global issues such as sustainability and gender issues; for more job-related and transferable skills; and for the provision of time, resources and staff commitment for experiential learning and adequate practical training.

More recently, Zinnah et al. (1998) laid down some essential steps for the revitalization of agricultural extension curriculum, including stakeholder analysis and training needs assessment. A starting point for this would be the kind of more broadly based labour market studies, which as we have noted, appear to be generally lacking. One of the most pressing needs throughout the sector is for more participation of key stakeholders. Whilst this is now becoming better understood, at least in theory, it remains much neglected in practice, or only attempted in a half-hearted manner.

Similarly, agricultural colleges need to be assisted to become more closely linked to local communities in their vicinity. Whilst various forms of outreach have been tried, there is little evidence of the creation of meaningful, organic linkages between training institutions and local communities (Wallace, 1997a).

In the case of sub-degree level training of ‘professionals’ and ‘para-professionals’ to be involved in sustainability, food security and rural

development, there are serious deficiencies in many of the curricula in use in SSA today. *“The current curriculum at many agricultural education institutions is based on a high-input, fossil-fuel intensive agricultural production model. It is structured into discrete disciplines, which tend to focus on large-scale, single-crop agricultural production systems designed to dominate the environment. Little attention is paid to an interdisciplinary, farming systems perspective or to resource-conserving technologies and practices; small farm, polyculture systems and their sustainable production needs are often ignored”* (Van Crowder, 1997b: 2).

Polycultural and pluralistic approaches present particular challenges to trainers and trainees alike. In some cases, for example in the Gambia, polyculture has been promoted and agricultural extension workers are now expected to take on the whole gamut of production problems facing rural households, be they with field crops, vegetable gardens, livestock, fish farming, tree planting, bee-keeping or food preservation. In almost all SSA countries, agricultural extensionists are expected to be able to advise, at least, on agroforestry, farm trees and fish farming as well as field crops and livestock. As the Malawi Government’s 2000 policy document shows, covering these broader, technical contents is only part of the story. Extension workers now have to be able to assist their clients in issues relating to improved business planning and management, operating in freer market conditions, obtaining leverage through their membership of community organizations such as farmers’ associations, making wider choices in relation to total resource management and participating in participatory planning and evaluation of the extension services.

Van Crowder (1997b) argues for a revision of agricultural curricula, which should address the new role of market-oriented agriculture and the importance of food security and poverty issues. In many agricultural education institutes, the section of the curriculum covering extension methodology is insufficient and needs to be revised if extension workers are to be well trained in the relevant skills. All field workers need at least basic skills and knowledge of participatory methodologies for problem identification, information gathering, planning and participatory monitoring and evaluation of extension projects. A shift to collaborative learning approaches, as opposed to expert- and technology-driven models is also needed, with greater focus on practical fieldwork, outreach activities and problem-solving activities based on local needs and real life problems.

Van Crowder (1997b) also discusses the need for an interdisciplinary, systems approach and an increased environmental awareness, with emphasis on sustainable development. These demand that students comprehend the complexity and diversity of eco-system management and that environmental concerns need to be fully integrated into courses, rather than simply treated as add-ons. Further needs, still often neglected, are training in gender awareness, analysis and planning and an understanding of population issues as an integral part of the training of all rural development professionals.

In addition to all these, curricula need to address HIV/AIDS and related health issues, as these increase the social complexity of the extension worker's task; in particular, the changing structure of client groups and labour availability are altered where the main 'bread winners' in the household are sick, or have died and productive activities are carried out by either the aged, or the very young.

Enhancing content is also required for adult education and training programmes. The whole area of 'village-level training', 'farmer training' or 'non-formal adult education' also demonstrates some common weaknesses in much of the SSA. In public-sector training centres there is still frequently a tendency to offer *"a traditional type of farmer training programme based in well rehearsed production techniques, often outside the reach of the resource-poor small farmers... All too often the approach is top-down, with little effort to draw on local ITK (indigenous technical knowledge), or to adopt 'Farmer First' approaches. The range of skills needed by part-time farmers, subsistence producers and above all by rural women, are often ignored or are poorly addressed"* (Wallace et al., 1996: 17).

Bennell (1998) recognized that provision of agricultural training seems to have had little relevance to the actual needs of farmers or farming situations. In many instances the curricula used in farmer training are irrelevant and unattractive, due mainly to a lack of any dynamic process for curriculum review and reform. Frequently feedback mechanisms are missing and there are no resources to support follow-up visits, needed both to support continuation of the learning process and as part of *ex-post* evaluation. As a result, courses fail to be 'tailored' to the prevailing economic and resource realities of the local environment. Nor do they reflect the changes in the problems, constraints, or opportunities that face

rural households over time. Farmers themselves should be key resource persons, actively participating in curriculum reform processes. The adoption of such approaches becomes even more compelling as small farmers enter the market to trade quantities of produce. They are faced with a competitive environment and need to develop new skills in marketing, account keeping, food processing and storage, etc. (Wallace et al., 1996).

Box 11. Training needs assessment for community forestry – South Africa

The introduction of a new forest policy in South Africa has led to a shift away from the traditional focus on commercial forestry and a narrow interpretation of conservation to an emphasis upon community forestry with the full participation of all stakeholders concerned with the utilization of the nation's tree-based resources.

(...)

The new policy embraces community-driven initiatives, community forestry must therefore become a process of facilitation. Existing forestry training will need to be adapted to provide the people skills required to promote the envisaged 'facilitatory environment'.

(...)

Extension staff and community facilitators argued that 'people skills' were the most difficult to acquire and yet the most important to ensure the sustainability of initiatives. Service providers with traditional scientific backgrounds felt that such people skills (derived from anthropology, economics, development studies, geography, planning and sociology) would help them to understand communities better and to decide when and how to apply purely technical solutions.

(...)

There are far more critical issues for communities and interest groups than trees. Priorities include the provision of water, food, housing, good health, employment and education. Tree growing then is not a 'product' which is in foremost demand. Its promotion only becomes viable and of interest to communities when it is seen as a 'process' of empowerment, one which addresses the 'problems' of communities. For community forestry to be successful, it must contribute to such things as income generation, improved health/nutrition, time saving (when collecting fuel), greater comfort/shade in the fields and crop protection (e.g. from wind or flood damage).

Source: Underwood, 1998-1999.

2.4 Steps towards a consistent response to training needs

Whilst diversification of the functions of agricultural education institutions would seem a rational response to the challenges facing the sector, in practice they appear to have been slow to respond to new areas of demand or newly identified audiences. There is now some trend in institutions of post-secondary education to enter into the provision of continuing education and short training courses to meet the needs of practitioners at different levels. The examples that follow describe the kind of approaches that are being taken and indicate the potential that exists for such innovations to catalyse constructive linkages and interactions, leading to more demand-responsive use of institutional resources.

A South African example is the formation of the School of Rural Community Development, at the University of Natal, established in order to address national rural development needs, by training rural development professionals at a range of different levels (certificate, diploma and degree). There is a strong emphasis on experiential learning, with students undertaking community internships as part of their diploma and degree programmes (Luckett and Luckett, 1999).

Wallace et al. (1996) gave an account of the establishment of the Centre for In-service and Continuing Education (CICE) at the Botswana Agricultural College. This facility, once developed, responded to many different opportunities and demands, such as offering short courses in management skills or computer applications for a range of audiences, recruited much more widely than was the case for the traditional agricultural courses. The courses were opened to participants coming from the whole spectrum of disciplines that support rural development and from the many different types of organizations involved in it (Van den Bor, 1994; Wallace et al., 1996).

A recent innovation is that at Makerere University in Uganda, where the Faculty of Agriculture established the Continuing Agricultural Education Centre (CAEC) in 1993 as a national training facility, with joint funding from the World Bank and Government of Uganda. CAEC seeks to be *“The leading centre providing client-responsive training and services for development of agriculture and agroindustry...”* and its mission is: *“To enhance the capacity of professionals and practitioners; disseminate knowledge and technologies for sustainable*

development of agricultural and agroindustrial sectors” (Kibwika, undated: 2). It is envisaged that CAEC will establish and strengthen linkages with other institutions providing agricultural and agroindustrial related services, particularly the Agricultural Research and Development Centres (ARDCs), the National Agricultural Research Organization (NARO), the private sector; Non Government Organizations (NGOs); local governments; national, regional and international agricultural training institutions.

The uniqueness of CAEC training activities (such as seminars, workshops and conferences, etc.) as well as courses, lies in their potential for a quick response to the current and future needs in a way that cannot be satisfied by the conventional university training programmes. The Centre is structuring its curricula to provide services on a demand-driven basis to various clients (Kibwika, undated).

Beyond the diversification of services provided by public training institutions, another significant trend relates to the emergence of a great diversity of providers, besides traditional agricultural schools. Increasingly, NGOs and community centres represent key partners in the delivery of skills for agriculture and the wider rural economy in sub-Saharan Africa. Among others, trends and experiences observed in Senegal, Botswana and Namibia offer clear evidence of this tendency towards a renewal of delivery systems.

Box 12. Diversification of training provision for the rural economy – Senegal

Nowadays, the supply of training available to rural populations is abundant and diversified; however, there is no structure to regulate it. Quality is uneven, for reasons linked to staff skills, and lack of funding and material resources.

Training areas are also diverse: literacy, training in production and processing techniques, institutional capacity building of farmers' organizations, management, handicrafts, etc. However, all training structures appear to show one common feature: all operate on external funding, with an as yet small contribution from the local population.

Despite this diversification, the training offered does not always meet the ever-increasing demand. Hence, the training of rural populations is no

longer solely in the hands of the government. Farmers' associations and NGOs are becoming more and more involved.

This is true of CARITAS, the *Association des maisons familiales rurales* (AMFR), and the *Fédération des organisations non gouvernementales* (FONGS), which cover most of the farmers' associations. Regional rural-development agencies are also increasingly getting involved in training and sometimes create their own centres, such as the *Centre interprofessionnel de formation aux métiers de l'agriculture* (CIFA).

These government-related or private organizations need help if they are to put together more effectively their training activities to supplement a limited and largely inflexible government offering. In fact, a veritable training market is now emerging in Senegal's farming and rural areas. This is occurring without government intervention but with operators, both public and private, gradually exposed to the rules of competition.

Source: Balizet, 2001.

Box 13. The Botswana Brigades: an update – Botswana

The Botswana Brigades, community training organizations, used to enrol students with seven years of basic education but have now increased the minimum entry qualification to 10 years following the government implementation of 10 years of open access to basic education.

Currently there are 41 brigades. Brigades offer various trades at different levels. The enrolment figures show that the enrolment in the brigades increased significantly between 1993 (close to 3,000 learners) and 1998 (4,000 learners).

Brigades through the years have made Botswana famous because of their training and production activities, referred to as *training with production* and became modern training institutions in the traditional rural society of Botswana. The brigade is owned by the community and managed through a Board of Trustees.

The first aim of establishing brigades was to encourage respective communities to participate in their development and endeavour to improve their livelihood through entrepreneurship and self-reliance.

The second motive for establishing the brigades was due to concerns over the future of school-leavers and demand for semi-skilled labour for the country. Brigades used to be the only alternative to academic upgrading and on-the-job training.

In the past, brigades' training costs were covered from income generated from sales of products/services. The training element in the brigades was by then considered cheap to run. Today, the government provides assistance to the Botswana Brigades by providing financial support for training and staff salaries (80 per cent of teacher salaries).

Although the achievements of the brigade movement are widely recognized, Botswana is currently experiencing tremendous problems with regard to the management of these institutions. Brigades are being equipped with hardware, software and trained personnel to maintain the accounts on computers. It is hoped that this initiative will improve management efficiency, transparency and allow a proper monitoring of the brigades' activities.

Source: Atchoarena and Delluc, 2002.

Box 14. Community skills development centres – Namibia

In 1998 Namibia embarked on a large community training initiative to help the unemployed youths and communities to engage in productive activities. This programme was to be implemented through the community skills development centres (COSDECs). Initially, these centres were to be equipped and staffed by the Ministry of Education. However, the Ministry's intention was to ultimately hand over these centres to the local communities, with a view to making them community-owned, similar to the Botswana Brigades scheme.

There are currently seven COSDECs; five are funded by the European Commission, the other two are supported by the Namibia Association of Norway and HOPE '87, an Austrian non-governmental organization.

All COSDECs are affiliated to the Community Skills Development Foundation, which provides the centres with advisory services as well as technical support. It is the body through which they are linked to one another as well as to outside agencies. The Foundation provides the COSDECs with seed funding which it would have received from the government, the private

sector, individual benefactors and donor agencies. However, the centres are in turn expected to mobilize additional resources through selling their product fees from trainees.

Similar to the Botswana Brigades, the COSDECs are owned by a Community Trust, which is run by a Board of Trustees. The Board is responsible for the appointment of a manager. However, instructors are part-time and are recruited on a contract.

The training courses on offer differ from one region to another. They are for self-employment, as well as for employment needs of the informal sector. Curricula are flexible and can be provided by the Foundation.

Awards and certification are done by the Namibia Chamber of Craft (NCC). The NCC is a body that brings together various craft associations. It is modelled on the German Chambers of Crafts. However, it is expected that, eventually, following the planned implementation of competency-based modular curricula in the formal vocational education and training system, COSDECs' programmes will become eligible for national certification within the framework of the Namibia Vocational Qualification.

COSDECs are still very new and modest in size (36 students in 1998, 353 in 2000). It is therefore not possible to assess their impact. However, their design clearly reflected a concern for rural communities and informal-sector employment.

Source: Atchoarena and Delluc, 2002.

2.5 Directions for reform

Education for agriculture and rural development has an important role to play to enhance learning and thus to contribute significantly to the alleviation of poverty throughout the rural economies of SSA. Considerable investment was made in the development of agricultural education institutions in the past, but for a number of reasons, their potential was hardly ever realized and ultimately the whole sector became moribund and unable to impact the learning needs of the rural sector in a meaningful manner. More recently, innovative approaches have begun to be tried, particularly by NGOs and the private sector and also in the public sector. These efforts, however, are often restricted to isolated case studies at the micro-level. They are frequently donor-led initiatives and hence neither replicable nor internally sustainable. They do show what good practice

can achieve and provide models and hope for aspiring innovators. There remains an over-riding need for the revitalization of skill provision for rural development in SSA and elsewhere.

A framework of analysis, built upon a set of factors that will characterize an integrated and effective delivery training system for agriculture and rural development can guide this much needed revitalization. Such a tool can be viewed as an agenda for renewal, or as a set of action points for reform. It consists of a list of ten key issues to be addressed. Whilst the 'ideal' situation would be to synchronize work on all fronts at the same time, in practical terms improvements are likely to be phased and incremental over a long period of time. Hopefully, in such a process, many of the examples of good practice can become incorporated, adapted into a wider response, leading to cumulative benefits and impact upon all the key actors, but particularly amongst poor rural households and communities.

Directions for reform include:

- (i) Formulating a clearly developed policy framework, which includes a coherent set of aims and targets for every component, covering both the formal and non-formal domains. Such a framework would facilitate the co-ordination of the different enabling bodies (ministries, parastatals, commercial firms and NGOs/CSOs). It would also contribute to a strong liaison between natural resources ministries and the ministries of education and social services (youth, women's interests, etc.);
- (ii) Establishing dialogue, through formal mechanisms, between policy bodies and both local and international funding agencies. This would contribute to better clarity and co-ordination of all activities within the parameters set by the policy framework;
- (iii) At the operational level, building strong linkages between the various formal providers (agricultural technical schools, agricultural vocational training centres, post-secondary institutions) and the range of non-formal programmes, including extension services. The linkages would include both formal relationships, where appropriate and informal networks for information exchange and mutual learning. Linkages between providers, rural communities and households would be facilitated through the intermediary role of local NGOs and CSOs;

- (iv) Restructuring support services in view of a closer working partnership between national research organizations and extension/training services. The aim would be for these services to become learning institutions through dialogue with rural clients and by promoting 'farmer-led technology development' and 'farmer-to-farmer extension and training'. In addition, working relationships also need to be established between extension/training organizations and rural schools in their agriculture/rural science programmes;
- (v) Reforming curriculum processes and contents⁴. This would require a participatory approach, with the involvement of stakeholders (including new target audiences) in the identification and analysis of training needs (including emerging areas of knowledge, skills and competencies); in the design of training programmes (including opportunities for experiential learning in 'real world' situations); and in monitoring, evaluation and impact assessments. In terms of content, curriculum renewal can no longer be viewed as a one-off activity, but as a regular activity with curriculum processes and contents being adjusted according to changing demands and opportunities. The identification of new audiences, beyond farmers, is needed to ensure that access and appropriate training for deprived groups in rural society are considered;
- (vi) Balancing theoretical underpinning with context-specific material, based on broadly informed inventories of training needs, arising both from local labour market studies and targeted needs' assessments, as well as responding to emerging global issues (e.g. environment and ecosystems, gender, market forces, self-employment, role of ICTs). Teaching/training would need to be supported as appropriate through accessing opportunities provided by newer methodologies, including use of ICTs, experiential learning in off-campus situations, etc.;
- (vii) Where appropriate, improving the teaching of practical skills through a national scheme for assessment of vocational qualifications, which is sufficiently flexible and locally appropriate to cater for the wide range of educational levels;

4. See: Food and Agriculture Organization of the United Nations (FAO), *Participatory curriculum development study: A training guide* (http://www.fao.org/sd/2002/KN0902_en.htm), also available in Spanish and French.

- (viii) Building, at the policy level, institutional capacity and leadership. This would involve, for instance, interaction with peers in national and international forums, study tours, mentoring, sabbaticals and focused training events. Leaders will be involved in the shaping of the training policy framework for agriculture and rural development and will feel supported through the enhanced value and priority accorded to the sector;
- (ix) Building new kinds of managerial capacity at the institutional level. Policy reforms are unlikely to be effective unless there are more profound changes in institutional culture and structures, at the provider level, to sustain the application and adaptation of newly developed training strategies, methods and content;
- (x) Adopting a long-term view for the reform process. There are no 'quick fixes' and any innovation needs a fair period of support if it is to be embedded in the ongoing programme at national or institutional level.

Finally it must be acknowledged that, whilst it is a vital key to improving productivity and sustainability in rural areas of SSA, a revitalized training system is only one of several factors that need to be present and must therefore be accompanied by other supportive conditions at the macroeconomic level. These will include, for example, favourable terms of trade, access (and preferably legal title) to land and other physical assets, provision of basic infrastructure, freedom from civil strife and improved levels of justice, equity and inclusion. Thus, the training agenda for rural development must be part of a wider package of reforms which, when taken together, will enable rural households throughout SSA to experience rising levels of wealth and well-being.

3. Skills development in rural Asia: trends and experiences in selected countries

The diversity of countries, labour markets and education and training systems in Asia makes it difficult to draw a general pattern. Although the regional trend reflects a decline in terms of employment generation in agriculture, the sector remains, in most cases, a major contributor to GDP formation and job provision. In recent years, the deterioration of the unemployment and underemployment situation in agriculture and a decline in the productivity of the sector, have constituted a major concern in many

countries of the region (APO, 2000). Another significant trend has been the considerable shift of the rural workforce towards the off-farm sector.

The 1997 Asian crisis and the global economic slowdown of 2001 have had a massive impact on labour markets and of the mobility of labour across sectors. Countries of East and South East Asia severely affected by the 1997-1998 economic crisis were engaged in a process of recovery when the 2001 shock hit them. Available literature on the impact of the crisis on the region documented its negative effects on unemployment, underemployment and on poverty (Betcherman and Islam, 2001). Impacts were also felt on the sectoral distribution of employment. For instance, Indonesia experienced, during the crisis, a significant increase in the share of agriculture in total employment.

In this context of labour market destabilization, active labour market policies played an important role in countries of East and South East Asia to fight against unemployment and underemployment, including in rural areas. Training programmes, labour market information services, credit and livelihood promotion schemes and special public work programmes are among the instruments that have been used as part of the overall policy response to the Asian economic crisis.

Box 15. Farmer schools – Philippines

Major advances in farming technologies and the globalization of agricultural markets offer promising opportunities for improving the quality of life of farmers in developing countries. A major issue with these, however, concerns the effective and efficient delivery of the knowledge and information on these new advances and markets to dispersed farmers so that they can capitalize on these developments. The field school approach, as pioneered by FAO, is a way to introduce farmers to discover basic learning for dealing with pest management issues, in particular and crop management concerns in general. Because it educates rather than instructs, the field school is regarded as best suited for introducing knowledge-intensive technologies – such as *Integrated Pest Management* (IPM) – to farmers who have little, if any, formal schooling. The ultimate aim of the field school is to improve farmers' knowledge and decision-making abilities so they can cope with pest and crop management problems on their own.

In the Philippines, the field school approach was initially set up to introduce knowledge on IPM to irrigated rice farmers. Field schools have

since been established throughout the archipelago, with FFS activities already comprising a variety of farmers and crops, including upland and non-rice growers. The field school remains the main national extension approach used to enhance farmers' IPM knowledge and skills in crop production.

The *Farmer Field School* (FFS) is a season-long training of farmers involving participatory activities, hands-on analysis and decision-making. The aim is for farmers to gain an understanding and appreciation of the discovery-based learning methods in relation to these topics so they make good science-based crop and pest management decisions. A typical school consists of a class with 25-30 farmers who undergo a season-long (a half-day meeting each week over a 10-week period) experiential group learning programme focused on the crop and pest issues that they are likely to be confronted with.

The majority of the field schools in the Philippines are government run and financed. In order to diffuse FFS-acquired knowledge more rapidly, all FFS graduates are encouraged to share their knowledge and learning experiences with other farmers within their *barangays* (village) and elsewhere.

If field school graduates themselves are able to retain and disseminate their FFS-acquired knowledge and experiences – particularly through their informal communication channels which are relatively cheap to use and maintain – then FFS can become a cost-effective and viable approach to agricultural extension on a large scale. A case study of 307 rice farmers in Iloilo, Philippines, investigated whether FFS graduates retained and diffused the basic knowledge that they learned in a regular field school. From comparing knowledge scores on topics typically covered in a field school for different groups of FFS and non-FFS farmers, results showed that FFS graduates have generally higher knowledge scores than their non-FFS counterparts. Furthermore, there were no significant differences in the knowledge scores of old and new FFS graduates, suggesting that graduates retain their field school acquired knowledge.

Source: Rola, Quizon and Jamias, 2001.

3.1 The transformation of rural labour markets: challenges in China

China illustrates both the massive need for upgrading the skills of the population in rural areas and the challenge of developing alternative patterns of labour market transition for the huge labour force leaving the agriculture sector.

In China, the rural population still occupies about 70 per cent of the national total. Among the total rural labour force, approximately 275 million people are engaged in farming. Only 3.4 per cent received primary school education and 0.13 per cent received vocational education. There are only about 20 per cent of farmers who have received short-term training on practical technology and on average, the number of agricultural technicians is not sufficient to provide adequate support to farmers (Peifang, 2001).

In 1996, demand for the agricultural labour force decreased leading to a massive labour surplus. In this context, the central government advocated that priority should be placed on developing small cities and towns, promoting the development of off-farm economic activities so as to absorb the surplus of rural labour force. The provision of adequate skills must play an important role in that context.

The development of education between 1990 to 2000 resulted in a significant increase in the educational level of the population. For instance, the number of people with a college degree and above increased from 1,422 per 100,000 people to 3,611. This indicator of human capital stock moved up from 8,039 to 11,146 for people with certificates of senior-middle schools, including vocational and technical schools, from 23,344 to 33,961 for people with certificates of junior middle school. As a result, the number of people who did not study beyond primary education dropped from 37,057 per 100,000 to 35,701 per 100,000. Similarly, the rate of illiteracy among age 15 and above decreased from about 16 per cent to 7 per cent and the average number of years in education among the population increased from six years in 1990 to eight years in 2000. However, regional disparities are still pronounced.

According to an investigation conducted in five provinces and regions, the rate of illiteracy above 15 years old is 18.35 per cent in Yunnan, 19.16 per cent in Guizhou, 25.41 per cent in Gansu, 32.05 per cent in Qinghai and 18.68 per cent in Ningxia (Yixian and Yuping, 2001). The illiteracy rate is higher among females and ethnic minorities. Due to this situation, literacy programmes are still being conducted in Western poor rural areas.

Rural development benefited a great deal from education reform and progress. The results of a survey conducted in 2000 among farmers in 12 provinces and municipalities illustrated the current nature of the relationship between family income and level of education in rural China.

Table 4. Household income and productivity by level of education

Education level of households head	Family size	Income per capita (Yuan)	Labour force size	Units of cultivated land per person	Number of persons per worker	Units of cultivated land per worker	Productivity per worker (Yuan)
Basic	4.02	1300	2.29	2.97	1.76	5.22	2282
Middle	4.06	2000	2.27	1.88	1.79	3.36	3577
High	4.14	1700	2	1.33	2.07	2.74	3519

Source: Yixian and Yuping, 2001.

Findings displayed in *Table 4* confirm that the average per capita income of a family with less education is lower than that of a family with a middle or higher educational background. However, the highest levels, both for income and labour productivity, are recorded for the middle education level. This result could suggest that technical and vocational education has a great economic impact in rural areas.

Table 5. Components of economic structure in families with different education backgrounds

Type of family	Component of incomes					
	Crop production (%)	Animal production (%)	Private enterprise (%)	Working in industry (%)	Business managers (%)	Others (%)
Basic	54.36	10.25	5.88	21.82	3.87	3.83
Middle	28.09	4.60	15.08	27.70	12.35	12.18
High	20.03	4.77	7.88	59.01	5.46	5.85

Source: Yixian and Yuping, 2001.

Table 5 shows a significant link between level of education and sources of income. While families with low educational backgrounds derive about 65 per cent of their total income from agriculture and animals, farming constitutes less than a third of the income for households enjoying a higher level of education with industry becoming the first source of income. At the higher education level almost 60 per cent of income is derived from activities in industry. These results reflect the diversification of economic activities in rural China. They also show that households

with low education backgrounds are at a disadvantage to seize the new opportunities offered due to the transformation of the rural economy.

Although data are lacking in this respect, this result is probably valid for other countries in Asia. It increasingly shows that the training issue in rural areas cannot be restricted to productivity and sustainability of farming practices. It also relates to broader issues of livelihood patterns and poverty reduction.

Recent research conducted in China confirmed the economic impact of training on farming.

Table 6. Comparison of a trained and an untrained farmer's family income

	Sources of income (%)				
	Income per capita	Income per worker	Crop production	Animal production	Off-farm activities
With training	1999.94	3487.12	31.38	7.46	61.15
Without training	1668.04	2674.40	30.52	7.01	62.46

Source: Yixian, 2001.

According to this table, trained workers enjoy higher levels of income. Access to training is also related to higher levels of per capita income. Yet, no significant difference is observed between the two groups as far as the share of off-farm income is concerned. This may be due to the fact that the training received is very specific to farming systems. Such provision would be consistent with the demand from farmers. Hence, according to the survey about 63 per cent of trained farmers think that their adult training was 'useful' or 'very useful' for increasing their income and 50 per cent declared that they were willing to share the cost of training. On the one hand, what they requested most urgently was training on practical technology (78 per cent being the largest proportion). On the other hand, less than 9 per cent of the respondents declared being interested in general education or literacy classes.

Of the rural families investigated, the cost of education represented about 23 per cent of income, of which more than 80 per cent was spent on children's schooling. About 77 per cent of surveyed families considered that going to school is 'useful' or 'very useful' for improving their living standards. A total of 37 per cent expressed clearly their willingness to

give their children support for going to vocational schools or comprehensive middle schools in order to learn some useful skills, or science and technology, for their future.

3.2 Delivery patterns

One could find a great diversity of patterns for training delivery for agriculture and rural development in Asian countries. The following information provides an overview of the types of structures currently in place, with emphasis being placed on agriculture education institutions.

3.2.1 China

While vocational education and training are most needed, as indicated in the above tables (see *Section 3.1*), they are also the weakest in poor rural areas. Addressing the needs of the rural poor faces three major challenges.

First, in poor remote areas, traditions often provide a resistance to a change in production modes through the introduction of new knowledge and skills. Fostering the demand for training requires offering concrete success stories to which local people can relate.

Second, while the overall education profile of rural areas has increased significantly in recent years, the disparities among regions have also widened. According to the fourth national population census in 1990, the percentage of rural population with education above junior middle school in 11 Eastern provinces was 40.5 per cent while in 11 Western provinces it was only 33.7 per cent. Similarly, the illiteracy rate in Western China exceeded by more than nine points, the rate recorded for the Eastern provinces. Such gaps have important implications for training policies in rural areas.

Third, the perceived need for ‘breaking away from farming’ in poor rural areas resulted in much attention being paid to the development of primary and middle school education with the intention of increasing the transition to higher education. In this process the need to improve the labour market relevance of vocational education and training was overlooked.

The first level of vocational education is provided at the junior secondary level, part of the 9-year compulsory education. The enrolment figure for junior vocational schools is about 900,000 students. It is to be

noted that, in an effort to build skills for rural development, most junior vocational schools are located in rural areas.

At the senior secondary level technical and vocational education is provided by four different types of institutions geared towards various types of skills. Available data for 1996 show a marked difference in the development of technical and vocational education across provinces. Typically, areas with particularly low levels of participation were poor provinces.

Table 7. Comparison of vocational students in every 10 thousand population – 1996

	Total number of population (in 10,000)	Vocation technical students	Secondary technical students	Normal school students	Vocational middle school students
National	120.7 thousand	35.01	27.72	7.29	39.19
Guizhou	3495	25.49	18.95	6.54	19.73
Yunnan	3971	27.62	20.13	7.49	24.63
Shanxi	3500	30.61	24.02	6.59	39.31
Gansu	2426	25.55	18.77	6.78	18.84
Qinghai	479	28.14	15.46	12.68	27.26
Ningxia	509	25.06	16.89	8.17	16.11
Xinjiang	1654	44.00	33.01	10.99	31.41
Guangxi	4257	28.00	21.65	6.34	30.05

Source: Li, 1998.

In addition to its small capacity, vocational education in poor areas suffers from low levels of teacher qualification plus the lack of training facilities in order to give students exposure to real working conditions. In fact, attending higher educational institutions is often seen as the main aim of vocational education. As a result it is disconnected from local labour markets.

Within the framework of the development of the nine-year compulsory education, the expansion of vocational education was

accelerated at the junior, middle and senior levels with middle schools being the main component. The proportion of students in pre-service vocational schools at senior middle school level has increased from 18 per cent in 1980 to 56 per cent in 1996 representing about 10 million students. In addition, large-scale training programmes on agricultural skills, science and technology are conducted for farmers and rural workers in an effort to foster local development. Beyond quantitative expansion, the new attention being paid to vocational education and training reflects a broader strategy to adjust human resources to industrial restructuring in both rural and urban areas. This adjustment is part of the broad shift from a socialist to a market-oriented economy.

3.2.2 India

Education, both general and agricultural and agriculture research and extension are considered to have played an important role in the growth of agriculture production, particularly in the production of wheat and rice. It is worth noting that in India, skill development in agriculture has a relatively long history.

In India formal education in agriculture is about a century old. Towards the last quarter of nineteenth Century a few institutions were set up in different parts of India to offer certificate, diploma or licence courses in agriculture. Agricultural education started with the setting up of five agricultural colleges. These colleges were established at Lyalpur, Pune, Coimbatore, Sabour and Kempur on the recommendations of the Famine Commission of 1901. The courses and curricula offered by these institutions were mainly oriented towards training local technical manpower to assist the British Administration in improving the inflow of revenue to Government coffers. During the early 1920s they received academic recognition from universities and started professional degree programmes in agriculture.

However, in 1951 there were only 18 agricultural colleges with an annual intake capacity of about one thousand students and seven veterinary colleges admitting about 400 students per year. Initially agricultural education received attention only due to the fear of famine.

It is generally felt that agricultural education and extension played an important role in the modernization of the sector. The 1960s saw the beginning of a breakthrough in agriculture production as well as the

development of a new system of agriculture education and extension. This transformation contributed to a sizeable improvement in per-acre yield.

Furthermore, agricultural education contributed to the response to the challenges posed by extreme vagaries of nature and to turn an *extreme food shortage economy* into a *food surplus economy*. Hence, besides research, agricultural education made it possible to evolve such varieties that are resistant to pest and diseases and also develop new techniques of crop cultivation in the drought-affected areas. The gulf between the agricultural scientist and the farmer was narrowed with the Green Revolution, which created a climate of confidence in India's growth potential.

Contrary to this view there is an apprehension about the contribution of agricultural education to agricultural production and rural development. According to Maguire (2000), "Agricultural universities had been slow to explore how different rural strategies might enhance the generation and distribution of employment and income, strengthen the income-earning capacities of resource-poor households, improve the management of soil, water, agroforestry and common property resources and increase efficiencies, as well as equity in product and credit markets". This is true in the case of agricultural universities in India, which confine themselves mainly to narrow disciplines and rarely look into the issues outlined by Maguire.

Despite progress achieved, there are many constraints on agriculture in India that pose challenges to agricultural education, extension and research. This is reflected by the fact that the average yield is much less in India than in many countries. As in other countries (see China, for instance, above), increasing productivity is one of the objectives of agricultural vocational education.

In 1978, the *All India Council of Technical Education* (AICTE) recommended the institution of a novel scheme called 'community polytechnics' for the rural areas. Over the years, the *community polytechnics* (CP) have evolved to perform the following functions:

- (i) identifying problems in rural areas;
- (ii) initiating technology transfer in rural areas;

- (iii) acting as linkages between the technical institutes and the rural community;
- (iv) providing support for rural development;
- (v) providing training for self-employment in the services sector, particularly for youth, women and the disadvantaged groups.

On average a community polytechnic includes five extension centres, each serving about 10 to 12 villages. It is estimated that community polytechnics train about 500 rural youth every year. The courses are competency based and range from 3-9 months in duration. Focusing on local needs, the community polytechnics do not set specific admission criteria on the basis of age, qualification or gender. These institutions provide an interesting attempt to address training needs in rural areas in a holistic way.

Different to the option taken in other countries, like China, where technical and vocational education plays an important role in the overall skill development policy, India did not pay much attention to school-based training. Furthermore, in the past, technical and vocational education was mostly available in urban areas. Today, however, the need for using vocational and technical education in order to solve the living problems of rural areas and maintaining equitable development is increasingly recognized. As a result, in recent years, vocational and technical education has received a boost with the onset of the economic reforms process in India.

3.2.3 Thailand

As early as 1953, the Department of Agriculture Extension, Ministry of Agriculture and Co-operatives launched a vast non-formal education programme directed at rural areas. The 4H Club project was conceived to improve the agricultural knowledge of children of farm origin. In total, more than 3,000,000 persons received training under this scheme throughout the country. Even though Thailand has expanded its industrial growth, the majority of its people are still agriculturists who produce agricultural products for their own personal food supply and for delivery to many major factories.

Increasingly, skills for rural development involve the Ministry of Education. In 1998, the Department of Vocational Education of the Ministry

of Education launched a project called 'Agriculture Education Reform for Livelihood'. This project aimed at modifying the curriculum to suit the problems and needs of agriculturists' daily lives. It also fostered an integration of all content and focused on a holistic approach towards skills development for livelihood rather than only for agriculture.

The project targeted low-income students in rural areas. Students must have completed lower secondary education (Mathayom 3) in rural schools. Family income, less than 50,000 baht per year, was chosen as an admission criterion. Furthermore, students are provided free education and accommodation and benefit from a fellowship (equivalent to US\$ 1,100 per year).

The social dimension of the project reflected a clear concern of the Ministry for disadvantaged rural children. This aspect was reinforced when rural areas were badly affected by the socio-economic effects of the Asia crisis.

Apart from education and children, the Ministry of Education, through its Department of Non-Formal Education, provides training for enhancing the quality of people's life, especially the farmers in rural areas. *Integrated Pest Management* (IPM) is a pest-control strategy based on the determination of an economic threshold that indicates when a pest population is approaching the level at which control measures are necessary to prevent a decline in net returns. In this context, IPM rests on the set of ecological principles that attempt to capitalize on natural pest mortality factors.

Hence, the Department of Non-Formal Education (NFE) has agreed to work closely with FAO and the Thai Education Foundation on an IPM Project. It has been launched at grass-roots level through Non-Formal Education Vocational short courses and Non-Formal Education Vocational Certificates. Due to the co-operation of NFE personnel from central, regional, provincial and district offices and volunteer teachers, *Integrated Pest Management* (IPM) methodologies and knowledge have spread systematically, rapidly and widely throughout the country.

IPM methodologies aim at assigning group learners to find facts among themselves through their practices in the field. Group discussion and problem solving are systematic approaches encouraging them to learn

through the process of soil preparation, utilization of fertilizer, seeding rice, prevention and curing of pests with natural means, etc.

In addition to its potential positive effect on health, the programme can help farmers to control better their expenditure while improving quality in rice production. Furthermore, the project has a great impact on gaining more self-confidence in rice planting. The IPM project has been widely, rapidly and efficiently spread throughout the country. Besides farmers, the experience also produced positive impacts on school education.

Box 16. From the field to the classroom: the side impact of IPM on school education – Thailand

Recognizing the opportunity to improve the livelihoods of farming communities via improvements in both the quality and appropriateness of education for rural schools, the Thai Education Foundation began to collaborate with FAO and World Education International to field test the IPM Farmer Field School curriculum for farmers. Field tests were done through selected NGOs in the northern region and the curriculum piloted directly by TEF with grade 6 students at Wat Nongmoo School, Payuhakiri District, Nakornsawan Province.

The initial objectives of the programme were to assist the schools in developing a curriculum that responded to community needs and build a solid foundation of knowledge of rice eco-systems and skills for managing rice fields, with a minimum use of agricultural chemicals, particularly pesticides. The Farmer Field School curriculum which was initially developed for adult farmers was adapted to fit the requirements of grade 6 children within a school environment with TEF staff working closely with a teacher in implementing the curriculum.

After field-testing the curriculum for one season, students' reception to the IPM curriculum was greater than expected. Students clearly demonstrated their skills in working in teams to observe field ecology, collecting and analyzing data and other information and making informed decisions to manage their fields. In addition, both students and teachers were motivated and enjoyed the complex learning experience presented in the rice eco-systems compared to the traditional rote memorization of

textbooks. Community members were also invited to participate in field days or student exhibitions as part of the curriculum. They demonstrated great interest about IPM methods and acquired IPM knowledge from working with students.

Currently, there are 43 schools and eight agricultural colleges that have joined in the programme as well as Non-Formal Education Centres in more than 40 provinces offering the IPM courses for young adults and adult farmers. This integrated training process has been praised and endorsed at policy level by various agencies as an effective training model leading the educational reform efforts.

Source: FAO, 2002.

4. Towards demand driven responses to training needs in rural areas: the Brazilian experience

4.1. The Brazilian context

Brazil is a country of continental dimensions with 8,512 million square kilometres and an estimated population of about 173 million in 2001. In the last decades, the share of the primary sector in the economy declined rapidly. The transformation of agriculture has been a consequence of several technological and economic modernization waves, particularly in the export-oriented sub-sector. Despite such change, old and new patterns co-exist even in the same area or business: labour and capital intensive technologies, traditional large estates side-by-side with tiny family farms, often economically unviable. Productivity increase resulted in a decline in employment and in new labour relations.

The urban population was 45.1 per cent in 1960; it jumped to 75.5 per cent in 1991 and reached 81.2 per cent in 2000, according to the census data. While the labour force was predominantly employed by the primary sector in 1960 (56.2 per cent), in 1999 the population working in agriculture represented 24.2 per cent (excluding the rural population of the Northern Region).

The rural economically active population is disadvantaged compared to the urban labour force. This is reflected in various indicators, including poverty figures, child and adolescent labour and educational attainment.

While the education sector has long been under-financed, the first vocational education and training agency, the National System of Industrial Apprenticeship (SENAI), was founded during the Second World War, in 1942. This organization is public in the sense that its main source of funding is a compulsory payroll tax. These resources, collected by the social security system, have official control, although industry businessmen manage them, establishing strong ties between the labour market and vocational training. Workers' and government participation was minimal in its first decades. However, this successful experience led the commerce and services sector to establish on the same basis the *Sistema Nacional de Aprendizagem Comercial* (National System of Commercial Apprenticeship – SENAC) in 1946. Several similar institutions followed their trail in Latin America, such as in Argentina, Chile, Colombia and Peru.

It is interesting to note that no similar system was put into place for the rural sector. When industrialists emerged, the farmers' class had declining political power and the rural labour force's education and training, as well as new technologies, were not their highest priority. The Federal Government was almost the only provider of basic and technical agricultural education for many decades. In fact, the Federal Government started to offer vocational and apprenticeship programmes primarily directed towards socially underprivileged children and youths. This stigmatized educational tracking contrasted with an academic education, reserved for the elite and later on for the emerging urban middle classes.

The educational reforms introduced in the mid-1990s made vocational education more diversified and distinct from academic education, although the same student may be enrolled at the same time for second level general education and for a vocational programme. On the other hand, the Federal Government gave up its quasi monopoly on the provision of technical education and supported projects from other levels of government and communities. Today the private sector is responsible for most of the technical and vocational education in Brazil. In contrast, for the primary sector, skill provision is still mainly related to the public sector, in particular the Federal Government. However, the government finances a significant percentage of private enrolment.

In 1995, the Federal Government established the National Plan of Workers Qualification (PLANFOR). It is based on a 1970 payroll tax in addition to other sources. Resources are allocated to a large array of

partners, like unions, NGOs, private organizations and state and municipal governments. From 1995 to 1998 this plan offered training courses to 5.7 million workers (about 8 per cent of the economically active population), spending almost US\$1 billion (Brazil, 1999). The last data available, related to 2000 (Brazil, 2001), show that the enrolment reached 3.1 million and total expenditure (public funds and partners' resources) was equivalent to about US\$272 million. The total average expenditure per student/hour was then US\$1.08 and the average number of hours per course was 61.9. This means that this plan offers a wide array of relatively short and cheap courses to a large number of students. Its effectiveness still remains an open question.

PLANFOR actions have been also directed to the rural area. In fact, 12.3 per cent of the trainees worked in the primary economic sector in 2000 and the corresponding expenditure was 8.2 per cent of the total.

4.2 Establishing a specific training agency for rural development

Although vocational education/training systems were founded for the secondary and tertiary sectors in the forties, no equivalent organization appeared for rural activities until 1991. However, in a previous attempt, the Federal Government had established a public agency for vocational education and training in the rural sector. Poor results determined its extinction in 1986.

The Federal Government founded SENAR as an institution directed towards vocational education and training as well as to social promotion (Act No. 8,315, dated 23 December 1991). The *Confederação Nacional da Agricultura* (National Agricultural Confederation), an employers' association, was given responsibility for organizing and managing it. The National Board, the most important administrative branch, is composed of one representative from the Ministry of Labour, one from the Ministry of Education, one from the Ministry of Agriculture, one from the *Organização das Cooperativas Brasileiras* (Organization of Brazilian Co-operatives), one from the agroindustrial sub-sector, five from the *Confederação Nacional da Agricultura* and five from the *Confederação Nacional dos Trabalhadores na Agricultura* (National Confederation of Agricultural Workers). Its funding still followed the traditional model, having as its main source a 2.5 per cent payroll tax.

SENAR started its activities in 1993 with a mandate to (1) organize, manage and perform rural occupational training and social promotion of rural workers in the national territory; (2) support employers' entities in organizing and elaborating training programmes at their own workplace; (3) establish and to diffuse rural vocational training and social promotion methodologies; (4) co-ordinate, supervise and control rural occupational training and social promotion programmes and projects; and (5) support the Federal Government in issues regarding rural occupational training and social promotion.

The new system is distinct from the other Brazilian training agencies on at least six different points:

- (i) A 'lighter' managerial structure, occupying much less personnel and facilities;
- (ii) A consolidated partnership with a wide variety of governmental and non-governmental organizations, as employer associations, rural labour unions, co-operatives and other associations in general;
- (iii) A balanced decision-making combining decentralization – 27 regional administrations, one for each state and one for the Federal District – with a central administration in Brasília;
- (iv) A formula combining, within the same organization, vocational training and social promotion;
- (v) A diversification of funding sources, through contractual agreements with partners, including the Ministry of Labour and by implementing activities of the National Plan of Workers' Qualification (PLANFOR); and
- (vi) A high degree of organizational flexibility in order to be able to adapt quickly to variations in resource availability and labour market needs.

In an effort to minimize the fixed costs, SENAR often rents space for its administration, uses workplaces or other facilities to develop activities, maintains a very small number of permanent personnel and hires temporary personnel or organizations to offer its services. According to a key official, "SENAR is a private, flexible, decentralized organization, independent from the state. It is proud of being as such". This self-definition reflects an aspiration for being seen as a private company, probably reflecting the high degree of competitiveness required by its changing milieu.

According to an important regional officer, SENAR's advantage also lies in its motivation to fill the gap with the secondary and tertiary economic sectors: "This is why SENAR works hard so that rural populations can be proud of their production and improve living conditions, thus avoiding rural-urban migration".

Table 8. Comparative features of training agencies in Brazil

First generation (SENAI, SENAC)	Second generation (SENAR)
Import substitution industrialization	Debt crisis and globalizing economy
High economic growth	Structural economic adjustment
Payroll tax as initially exclusive source of income	Quasi-tax on gross revenue from product sales*. Diversification of funding sources
Heavy structures	Light and flexible structures
Centred on systems own services. A few partnerships.	Numerous partnerships
Large facilities	Small/ borrowed/mobile facilities
Emphasis on permanent personnel	Emphasis on temporary, <i>ad hoc</i> personnel.
Education/training for employment	Education/training for work responsive to demands
High proportion of fixed costs	High proportion of variable costs.

4.3 Main features of SENAR training provision

Vocational training in the rural area has specific features. Contrary to the urban sector, workers have lower levels of general education, they can seldom leave their workplace, population is highly scattered and the employers are not conscious enough of the educational contribution to increase productivity. In response to these difficulties, SENAR tries to go where the student is, using for that a great variety of facilities in rural properties. This approach reduces students' transportation and facilities costs, though it means that each course may have a particular problem with partnership and logistics.

In fact, since each municipality in general has a rural employer association, meaning satisfactory capillary action, the SENAR Regional Administration in general receives demands for training, at the same time that it stimulates certain kinds of training (e.g. environmental issues even if the clients do not ask for them). These demands are very often beyond available resources. The proposals are analysed and, once converted into a project or programme, are submitted to the regional board. Although the

National Administration prepares materials for studying the labour market, data may be hard to find. Empirical knowledge may be a frequent solution. Once the plan of action is established, employers' associations and unions diffuse it and mobilize people to enrol in the different training alternatives. This is actually a crucial stage of the process. As a manager described, "SENAR work is based on a tripod: mobilization, teaching and supervision." If the quality of one of the 'supports' fails, the programme will also be prone to failure. In fact, the educational programmes' identification and acceptance depend very often on face-to-face contacts, personal leadership, persuasion and transmission of previous successful experiences among producers. Thus, reaching the most vulnerable groups is like a 'work for ants', according to a rural expression that means a sum of small tasks. In this context, mobilization agents are called to play an important role.

All the courses and projects are to be offered in rural areas to workers, not to employers, the only exceptions being the owners of family properties, as defined by regulations. However, a key official criticized the focus on family agriculture. He said that this is a sort of ideological distinction and stigmatization, since the market has no room anymore for small-scale production. Nevertheless, conditions are favourable to small farms if they receive training, new technologies and credit to reach higher productivity levels.

Candidates for occupational training often have a schooling level below the requirements, although they may have a lot of agricultural experience. The administration often enrols them as 'special students'. Lack of general education is seen as a serious obstacle for the system. Peasants are often illiterate and cannot read even basic safety instructions for machines and chemical products.

Literacy classes are often provided within occupational training programmes. The learning process is related to the rural work and living conditions, as proposed by Paulo Freire. Mathematics is also based on context, never on abstractions *per se*, for instance, formulating all the notions about the metric system on productive activities, like measuring land, seed production, milk, etc.

Contrary to the other training agencies – SENAI and SENAC – SENAR has no permanent personnel for teaching, avoiding relatively high social security costs for employers in Brazil. Such a strategy saves money, however, it is much harder to build an organizational culture and to

accumulate instructors' contributions in skills and knowledge for the institution.

A part of the teaching materials is centrally developed. Nevertheless, in order to take into account regional diversities, trainers may substitute these booklets with locally produced summaries. Students, once having finished the course/programme, are certified on the basis of national SENAR regulations. 'Special students' are issued with an attestation of attendance.

Gender relations among students are sensitive. Occupations are differentiated in terms of gender, so that men and women will not often attend the same courses/programmes. In spite of historical patriarchy, women's status in Brazil is clearly on the way up. Their influence is increasing both at school and in the workplace, particularly in urban societies. The impact of their level of schooling on the improvement of health, home management, birth and mortality rates and other aspects of social life is very important. At SENAR rural women also have been a preferential target population for social promotion programmes, including protection against toxic products used in agriculture. Several interviewees pointed out some favourable repercussions from rural wives' participation.

Table 9. SENAR occupational training by field of action 1997-2000

Fields	Groups	Enrolment*	Class hours
Agriculture (crop production)			
1997	4,312	76,197	99,900
1998	4,039	64,314	93,153
1999	4,106	72,712	102,999
2000	3,369	60,769	85,766
Cattle raising			
1997	8,199	115,952	235,489
1998	6,635	93,381	205,133
1999	6,546	99,897	197,123
2000	4,644	73,232	144,121
Sylviculture			
1997	167	2,768	4,067
1998	39	543	1,819
1999	54	1,327	2,273
2000	31	862	1,230

Aquaculture			
1997	627	9230	16,329
1998	477	7,375	13,998
1999	420	6,284	12,375
2000	331	7,057	11,510
Agroindustry			
1997	2,732	38,194	76,895
1998	3,180	48,301	100,243
1999	3,368	52,811	103,177
2000	2,550	39,421	90,696
Extractive logging			
1997	65	934	1,998
1998	104	1,764	3,606
1999	46	759	1,642
2000	23	533	1,112
Agriculture-forestry-livestock activities			
1997	5,149	89,127	151,513
1998	-	-	-
1999	-	-	-
2000	-	-	-
Support for animal and vegetable extractive activities			
1997	35	647	1,400
1998	5,427	95,484	150,502
1999	5,747	109,697	161,819
2000	4,157	74,991	116,604
Services			
1997	614	7,702	29,059
1998	567	7,228	22,718
1999	890	11,580	36,832
2000	747	10,237	40,974
TOTAL			
1997	21,900	340,751	616,650
1998	20,468	318,390	591,172
1999	21,177	355,157	618,240
2000	15,852	267,102	492,013

* Data for 2000 compute students who finish courses only.

Source: SENAR Reports.

Table 9 shows the evolution of occupational training groups, enrolment and class hours. Cattle raising, support for animal and vegetable extractive activities, agroindustry and agriculture being the most benefited sub-sectors. The average number of students per group varied from 15.6 to 16.8, thus meaning that their size is relatively small. The average number of hours

per course varied from 28.2 to 31.0, that is, most or almost all of the investment goes to short courses. Such short duration is related to the high opportunity cost for workers, their lower level of schooling and external factors, like *visual limitations*, easily overcome if glasses were to be obtained. As a response, SENAR has conducted occupational training integrated to literacy training counting on several partners.

The drop-out rate is around 20 per cent. This figure sounds very high when compared to PLANFOR, i.e. 3 per cent declared in 2000 (Brazil, 2001), or to the annual drop-out rate in first level education in the last years, i.e. over 10 per cent. This modest level of performance is a result of several exogenous and endogenous factors. The former are particular low incentives for education and training in rural areas, unrealistic expectations of immediate results and transportation difficulties. The latter include instructors' pedagogical difficulties, their turnover, poor teaching materials (sometimes too general) and poor facilities.

In 1999, SENAR enrolment represented about 7.6 per cent of the economically active population in the primary sector. In the following year, sudden resource reduction made this proportion drop to 0.06 per cent, illustrating institutional financial instability. These percentages are much lower than those of the aforementioned PLANFOR, an official programme with a myriad of partners, and resources that are far higher than those of SENAR. According to the 2000 report, PLANFOR reached 15 per cent of the total economically active population (Brazil, 2001).

4.4 Financing and responsiveness

Studies on cost per student/participant or the evolution of financial resources are virtually non-existent. Yet, interviews and document analysis helped to clarify these issues. As pointed out before, vocational education/training systems in Brazil have been funded especially by a payroll tax. The same happened to SENAR, when it was constituted by a federal act in 1991. The complex game of opposing political pressures causes relatively frequent legal changes, reducing or increasing not only SENAR's, but also SENAI's and SENAC's income. Impacting on prices as an indirect tax, the contribution or quasi-tax affects sensitive areas, such as food prices and inflation rate. Therefore, 'ups and downs' in its legally established percentage are not surprising.

As a consequence, in the case of the SENAR, but not of SENAI and SENAC, the burden of the payroll tax on employment caused its substitution by a 0.1 per cent contribution (a sort of quasi-tax) on gross revenue derived from agroindustrial product sales.

It is estimated that around 90 per cent of the total SENAR income depends upon the compulsory contribution, the other 10 per cent coming from services, partnerships etc.

SENAR income composition is illustrative of the sector difficulties. A much greater part of the urban so-called 'S System' income originates in service sales and other non-traditional sources. The modest share of self-generated income recorded by SENAR reflects mainly the structural weaknesses of the rural sector.

Recognizing this handicap, a new act passed in 2001 (No. 10,256) increased the contribution percentage to 0.25 on gross revenue from agroindustrial product sales. Consequently, the statutory income reached an estimated yearly amount of around US\$19 million.

Collection from rural employers takes place through the official social security system. Its 3.5 per cent commission on the total amount is relatively high. Moreover, several interviewees complained of the late financial transfers to SENAR. Chronic social security deficit may be temporarily covered by the delay in sending money to its legal addressees. Furthermore, external auditing is practically unfeasible so that some interviewees called the social security system a black box from the SENAR standpoint. Transparency in governmental as well as non-governmental finance for the public in general is also very low.

Once received by the National Administration, the contribution goes to a fund to be distributed among states and the Federal District monthly. Regulations apply some 'Robin Hood criteria' for benefiting the least developed regions. One of them is the modest minimum of four courses/programmes per month. However, this equalization fund does not seem to have very significant effects on the regional distribution of enrolment and social promotion project participants (*Table 10*).

Table 10. SENAR occupational training enrolment and social promotion participants by geographical region, 2000 (%)

Regions	Occupational training enrolment	Social promotion participants
Northern	5.2	8.4
North-eastern	16.9	32.0
South-eastern	26.1	22.3
Southern	39.5	31.7
Central-western	12.3	5.6
TOTAL	100.0	100.0

Source: SENAR site (www.senar.org.br), information retrieved December 10, 2001.

The geographical distribution of occupational training enrolment and number of participants in social promotion projects (*Table 10*) reflects development disparities. Concentration is clear in Southern and South-eastern regions, where agricultural modernization and industrialization are more advanced, while Northern (the Amazon Valley), North-eastern and Central-western regions are less advanced. Except the North-eastern region, the poorest in Brazil, where social promotion project participants are in a majority, resource allocation is a result and an incentive to regional concentration. In some cases, local problems led to scarce geographical impact. This seems particularly true for the Amazon Valley, where population is highly dispersed. For example, in a North-eastern state, Maranhão, larger than Poland, the administration offered only four vocational training courses in 2000, awarding certificates to 416 students. In the same region, Paraíba had no activities.

4.5 *Efficiency*

In spite of numerous innovations and years of practice, evaluation needs to progress significantly at SENAR. The institution has systematic course and programme evaluation by students/participants, instructors and supervisors. The former evaluates instructors and courses/programmes, whereas instructors evaluate courses/programmes and the mobilization process. Supervisors make a comprehensive evaluation of the courses/programmes at all their stages. However, student/participant follow up is still to be implemented, although ILO co-operation has been negotiated for such an important programme.

A private group conducted a recent project evaluation on the socio-occupational impact of the *Occupational Education Programme for Non-Schooled Rural Workers* (Lopes, 2001). This exploratory project aimed to identify and to interpret the impact on selected rural communities of an integrated SENAR programme in less-developed areas. It integrates a literacy programme for youths over 15 years of age, social promotion and occupational education.

The investigation found relatively weak impact of the SENAR action on community organization, participation, as well as collective business and work perspective. People often did not show clear disposition to act together. In contrast, socio-occupational impact was significant, particularly concerning (i) entrepreneurship, (ii) being aware of the importance of education, (iii) use of television and printed teaching materials and (iv) perceptions of the need for further schooling and occupational education. Courses and programmes also incited motivation for reading, discussing political issues, as well as increased citizenship consciousness. These particular results were positive and significant, although further study is necessary.

Besides this project, an informal evaluation conducted by the *Confederação Nacional dos Trabalhadores na Agricultura* (National Confederation of Agricultural Workers – CONTAG) gave rise to some interesting points. According to its critical view, SENAR is managed by rural employers, as determined by law, with a symbolic participation of the other actors. CONTAG has three representatives with a total of 14 Board Members. However, they are restricted to managerial and financial issues. According to their perception, they do not have an actual voice in institutional policies. Thus, educational and social actions are conducted under the employers', not workers' perspective. As a consequence, courses are fundamentally directed toward teaching 'how to', i.e. to impart skills and in so doing missing the social and entrepreneurial aspects. Not leading to 'conscientization' (Paulo Freire's concept) these courses and programmes tend to reinforce the present social system. CONTAG's proposal is that employers manage 50 per cent of the earmarked resources, leaving the other half to the rural unions' programmes, which are based on their own philosophical principles. Since some of the most serious challenges facing Brazilian society are poverty and the low level of education, it advocates massive investment in education and social promotion in an institutional framework different from SENAR.

4.6 *Main lessons*

SENAR has offered interesting solutions to occupational education/training and social promotion in rural Brazil. It also has offered new alternatives in the field of management and partnership.

The option illustrated by the Brazilian experience is not on privatization, but a diverse kind of adaptation to a globalized economy. The main lesson to be learned is the need of a light, flexible organizational structure, cutting fixed costs. Key ingredients of the SENAR formula include:

- (i) *Private sector spirit:* Although SENAR is often described as a 'private company', this statement reflects an *aspiration*, not an actual legal status.
- (ii) *Equity promotion:* SENAR's experience has shown that market mechanisms alone are favourable to efficiency, but not necessarily to fairness and justice. According to the tradition of the Brazilian tax system, formulae have been largely used for resource distribution, in order to compensate for regional differences. Yet, this principle does not perform miracles for equity. The most important reason is that the struggles between economic and political forces eventually shape revenue formulae.
- (iii) *Focus on the economic performance of small productive units:* SENAR is concerned with better productive processes and entrepreneurship. Many of SENAR programmes and partnerships are directed toward preparing workers and particularly small and medium-sized producers to improve their productivity and expand their output. In Brazil, as in many other countries, small and medium-sized companies generate relatively more jobs than big business.
- (iv) *Articulation between decentralized management and central level governance:* Decentralized, flexible action is one of the greatest of SENAR's competitive advantages. However, it is necessary to ensure the capitalization of these experiences. Regional and national meetings for exchanging and analysing experiences among supervisors, instructors and mobilization agents are the main means for reaching this goal. Moreover, the national administration has set

standards for personnel selection, curricula planning, teaching material production, certification, etc.

- (v) *Synergy between social promotion and occupational training:* In the context of rural societies, one of the most successful features of SENAR's experience is the integration of occupational training and social promotion in the same organization. Work life is intrinsically related to general education, health education and other fields of activities already mentioned, requiring a holistic perspective. SENAR reaches better results in its proportion of active dialogue between occupational training and social promotion. This synergy seems to improve cost-effectiveness.

Adapting to modern times, SENAR has found new solutions and developed innovations. Its impact is still to be fully evaluated in order to know to what extent it has made a difference in rural society.

References

- Asian Productivity Organization (APO). 2001. *Rural transformation in Asia and the Pacific*. Report of the APO Study Meeting on Rural Transformation held in Yogyakarta on 29 November-3 December 1999. Tokyo: Asian Productivity Organization.
- Atchoarena, D.; Delluc, A. 2002. *Revisiting technical and vocational education in sub-Saharan Africa: an update on trends, innovations and challenges*. Paris: IIEP-UNESCO.
- Bakht, Z.; Shah, S. (Eds). 1996. Special issue on “Rural non-farm development in Bangladesh”. *The Bangladesh Development Studies*, XXIV(3-4). Dhaka: The Bangladesh Institute of Development Studies.
- Balizet, D. 2001. *Étude sur ‘Formation et développement rural au Sénégal : état des lieux et perspectives’*. Dakar: Centre africain d’études supérieures en gestion (CESAG).
- Bates, T. 1990. “Entrepreneur Human Capital Inputs and Small Business Longevity”. In: *The Review of Economics and Statistics* (72), 551-559.
- Bennell, P. 1999. “Learning to change: skills development among the economically vulnerable and socially excluded in developing countries”. In: *Employment and Training Papers* (43). Geneva: ILO.
- Bennell, P. 1998. *Vocational education and training in Tanzania and Zimbabwe in the context of economic reform*. Department for International Development, Education Research Series 28. London: DFID.
- Berdegue, J.A.; Reardon, R.; Escobar, G.; Echeverri, R. 2000. “Policies to promote non-farm rural employment in Latin America”. In: *ODI Natural Resource Perspectives*, 55, June.
- Betcherman, G.; Islam, R. (Ed.) *East Asian labor markets and the economic crisis – Impacts, responses and lessons*. 2001. Washington, D.C.: World Bank; Geneva: International Labour Organization.
- Cattarinich, X. 2001. *Pro-poor tourism initiatives in developing countries: analysis of secondary case studies*. PPT Working Paper No. 8.
- Centre d’études et de recherche sur les qualifications (CEREQ). 1997. “L’enseignement agricole”. In: *Formation Emploi* (57). Paris: La Documentation française.
- Debouvry, P. 1998. *Étude des formations agricoles en Afrique subsaharienne ; première phase : investigation*. Paris: Ministère d’État aux Affaires étrangères – Secrétariat d’Etat à la Coopération – GRET.

- Fluitman, F. 2001. *Working, but not well – notes on the nature and extent of employment problems in Sub-Saharan Africa*. Turin: International Training Centre of the ILO.
- FAO. 1993. *Report of the expert consultation on strategy options for higher education in agriculture*. Rome, Italy, 16-20 December 1991. Rome: FAO.
- FAO. 1997. *Issues and opportunities for agricultural education and training in the 1990s and beyond*. Rome: FAO.
- FAO. 2002. *Participatory curriculum development study: a training guide*. http://www.fao.org/sd/2002/KN0902_en.htm (also available in Spanish and French).
- FAO; Centre d'investissement, Programme de coopération FAO/Banque mondiale. 1991. *Tchad – Revue du sous-secteur de la formation rurale*. Rapport n° 144/91 CP-CHD 14 SR. Rome: FAO.
- FAO; Centre d'investissement, Programme de coopération FAO/Banque mondiale. 1992. *Pays du Sahel – Étude sous-régionale des stratégies du sous-secteur 'formations rurales' dans les pays sahéliens francophones (Burkina Faso, Mali, Mauritanie, Niger, Sénégal, Tchad)*. Rapport n° 83/92 CP-SSA 5 SR. Rome: FAO.
- FAO; Centre d'investissement, Programme de coopération FAO/Banque mondiale. 1993. *Mali – Revue du sous-secteur de l'enseignement agricole*. Rapport N° 50/93 CP-MAL 39. Rome: FAO.
- FAO; Centre d'Investissement, Programme de Coopération FAO/Banque mondiale. 1993. *Burkina Faso – Revue du sous-secteur de l'enseignement agricole*. Rapport N° 64/93 CP-BKF 33 SR. Rome: FAO.
- FAO; Centre d'investissement, Programme de coopération FAO/Banque mondiale. 1993. *Niger – Revue du sous-secteur de l'enseignement agricole*. Rapport n° 49/93 CP-NER 28. Rome: FAO.
- FAO; Centre d'investissement, Programme de coopération FAO/Banque mondiale. 1993. *Mauritanie – Revue du sous-secteur des formations rurales*. Rapport n° 66/93 CP-MAU 31. Rome: FAO.
- FAO; World Bank. 2000. *Agricultural knowledge and information systems for rural development (AKIS/RD) – Strategic vision and guiding principles*. Rome: FAO; World Bank.
- FAO. 1996. *Training for agriculture and rural development 1995-96*. Rome: FAO.

- Forni, F. et al. 1998. *Haciendo escuela. Alternancia, trabajo y desarrollo en el medio rural*. Buenos Aires: Ediciones Ciccus.
- Fremy, J. 2000. *10 years of training for agricultural extension in sub-Saharan Africa (1987-1998)*. Unpublished paper.
- Gale Johnson, D. 2000. "Agricultural adjustment in China: problems and prospects". In: *Population and Development Review*, 26(2), 319-334.
- Gallagher, K.D., 2001. *Self-financed field-schools: helping farmers go back to school* (draft). Rome: FAO.
- Gasperini, L. 2000. "From agricultural education to education for rural development and food security: All for education and food for all". Proceedings of 5th European Conference on Higher Agricultural Education, 10-13 September 2000, Seale-Hayne Campus, University of Plymouth, UK.
- Gibbs, R.M. (Ed.); Swaim, P.L.; Teixeira, R. 1998. *Rural education and training in the new economy – The myth of the rural skills gap*. Ames: Iowa State University Press.
- Gineste, M. 1998. *Réforme de l'enseignement et de la formation agricole et rurale – Rapport d'exécution du projet*. Projet FAO/Cameroun FAO/TCP/CMR/6613. Rome: FAO.
- Gomes, C.A.; Câmara, J. 2001. *Rural education and training in the Brazilian globalizing economy*. Brasília: SENAR.
- Gomes, C.A. 2000. "Brazil: an incomplete transition". In: Coulby, D.; Cowen, R.; Jones, C. (Eds), *Education in times of transition: World Yearbook of Education 2000*. London: Kogan.
- Gomes, C.A.; Capanema, C.; Câmara, J. 2000. "Brazil: overcoming five centuries of undereducation". In: Mazurek, K.; Winzer, M.A.; Majorek, C. (Eds), *Education in a global society: a comparative perspective*. Boston: Allyn and Bacon.
- Gomes, C.A. 1991. "Vocational education financing: an example of participation by employers in Brazil". In: *Prospects*, 21(3), 457-465.
- Grieshop, J.; Desmond, D. 2002. *Revisiting garden-based learning in basic education* (draft). Paper prepared for the International Institute for Educational Planning. Paris: IIEP-UNESCO.
- International Labour Office. 1998. *World Employment Report 1998-99*. Geneva: ILO.

- International Labour Office (ILO). 2002. *Learning and training for work in the knowledge society*. Report IV (1) of the 91st Session of the International Labour Conference. Geneva: ILO.
- Kibwika, P. Undated. *Background Overview to the Continuing Agricultural Education Centre (CAEC) at Makerere University in Uganda*. Unpublished paper.
- Kilpatrick, S., Falk, I., Harrison, L. Undated. *Learning in rural communities: a response to rapid economic change*. Launceston: Centre for Research and Learning in Regional Australia, University of Tasmania.
- Kwarteng, J.A.; Zinnah, M.M.; Ntifo-Siaw, E. 1997. *The status and constraints of training of extension staff in Africa: an African view*. Paper presented at the Joint Workshop on Extension Personnel Training in Africa, 19-24 October 1997, Cape Coast, Ghana.
- Lakin, M. 2002. *Basic education in rural areas: status, issues and prospects. A review of recent literature* (draft). Paper prepared for the International Institute for Educational Planning. Paris: IIEP-UNESCO.
- Li, Z. (Ed.). 1998. *Facing poverty - the background, current situation and strategy of educational development of poor area in China*. Guangxi: Guangxi Educational Publishing House.
- Lopes, M.Â.S. 2001. *Pesquisa sobre impactos sócio-ocupacionais em comunidades rurais participantes do Programa de Educação Profissional de Trabalhadores Rurais sem Escolaridade* [Research project on the socio-occupational impact of the Vocational Education Programme for Non-schooled Rural Workers on rural communities]. Brasília: SENAR.
- Luckett, S.; Luckett, K. 1999. "Developing 'reflective' development practitioners through an action-learning curriculum: problems and challenges in a South African context". In: *The Journal of Agricultural Education and Extension*, 6(3), 171-188.
- Maguire, C. 2000a. *From agriculture to rural development: critical choices for agricultural education*. Proceedings of 5th European Conference on Higher Agricultural Education, 10-13 September 2000, Seale-Hayne Campus, University of Plymouth, UK.
- Maguire, C. 2000b. *Agricultural education in Africa: managing change*. Paper prepared for Workshop 2000 sponsored by the

- Sasakawa Africa Association in Accra and Cape Coast, Ghana, 4-6 September 2000.
- Mahmud, W. 1996. "Employment patterns and income formation in rural Bangladesh: the role of rural non-farm sector". In: *The Bangladesh Development Studies*, XXIV(3-4). Dhaka: The Bangladesh Institute of Development Studies.
- Malley, J. Undated. *Responding to social and economic change: the take up of VET by schools*. CEET/ACER.
- Ministry of Agriculture, Forestry and Fisheries, Cambodia. 2000. *The agricultural education and training system in Cambodia: an analysis*. Agriculture Productivity Improvement Project.
- Mongbo, R.L.; Hatutangwi, B.K. 1997. *Support to training of agricultural service staff and managers in Africa. Preliminary proposals/scenarios including budgets and time schedules*. Paper presented at Workshop on Extension Personnel Training in Africa and 3rd Informal Consultation of International Supporters of Agricultural Extension Systems in Africa, 19-24 October 1997, Cape Coast University, Ghana.
- National Centre for Vocational Education Research (NCVER). 2001. *Vocational education and training in small rural school communities*. Leabrook, Australia: NCVER Ltd.
- Neiman, G. (Ed.). 2001. *Trabajo de campo – Producción, tecnología y empleo en el medio rural*. Buenos Aires: Ediciones Ciccus.
- Oeuvrard, F. 1995. "Le système éducatif en milieu rural". In: *Éducation et Formations* (43). Paris: Direction de l'Évaluation et de la Prospective, Ministère de l'Éducation nationale, de l'Enseignement supérieur, de la Recherche et de l'Insertion professionnelle.
- Ooijens, J.; Espinoza, M.; Tampe Birke, A. 2000. *Education for work in poor rural areas: a viable strategy of non-formal education*. Turin: International Training Centre of the ILO.
- Ooijens, J.; Espinoza, M.; Tampe Birke, A. 2000. *Éducation pour le travail dans des zones rurales à revenus faibles; une stratégie viable d'éducation non formelle*. Turin: International Training Centre of the ILO.
- Peifang, M. 2001. *Education for agricultural, rural development and food security in China*. Case study (draft) prepared within the framework of the FAO Project on All for Education and Food for All. Rome: FAO.

- PLANFOR. 1999. *Avaliação gerencial – 1995/1998: balanço de um projeto para o desenvolvimento sustentado* [Managerial evaluation – 1995/1998: report on a project for sustained development]. Brasília: MTE, SEFOR.
- PLANFOR. 2001. *Relatório gerencial PLANFOR 2000* [Managerial report PLANFOR 2000]. Brasília: MTE, SEFOR.
- Qamar. M.K. 2000. “Agricultural extension at the turn of the millennium: trends and challenges”. In: *Human resources in agricultural and rural development*. <http://www.fao.org/DOCREP/003/X7925M/X7925M15.htm>.
- Rivera, W.M. 2000. “The changing nature of agricultural information and the conflictive global developments shaping extension”. In: *The Journal of Agricultural Education and Extension*, 7(1), 31-41.
- Robinson, S.; Burfisher, M.; Hinojosa-Ojeda, R.; Thierfelder, K. 1993. “Agricultural policies and migration in a US-Mexico free trade area: a computable general equilibrium analysis”. In: *Journal of Policy Modeling*, 15 (5-6), 673-701.
- Rola, A.C.; Quizon, J.B.; Jamias, S.B. 2001. *Do farmer field school graduates retain and share what they learn?: An investigation in Iloilo, Philippines*. Paper prepared for the Farmer Field School (FFS) Workshop in Yogyakarta, Indonesia, 21-25 October 2002.
- Rosenfeld. 1985. *Farm women*. Chapel Hill: University of North Carolina Press.
- Shiva Reddy, B. 2001. *Education and rural development: an analysis of interrelationship between education and agricultural development, poverty, food security, child labour and environment in rural India* (draft). Hyderabad, India: Osmania University; Paris: IIEP-UNESCO.
- Smith, V. 1994. “A learner-centred approach to social skills for technical foresters”. In: *The Rural Development Forestry Network (RDFN) Paper, 17e*, Summer. Nottingham: Russell Press Ltd.
- Somtrakool, K. 2002. *The change from agriculture education to education for rural development and food security in Thailand* (draft). Bangkok: FAO; Regional Office for Asia and the Pacific.
- Spedding, C.R.W. 1979. *An introduction to agricultural systems*. London: Applied Science Publishers.

- Start, D. 2001. "The rise and fall of the rural non-farm economy: poverty impacts and policy options". In: *Development Policy Review*, 19(4), 491-505. London: Overseas Development Institute.
- Sunanda Rao, P. 2001. *From agricultural education to education for rural development and food security in India*. (Draft paper prepared for the IIEP/FAO Project on the same topic).
- Tajima, S. 2000. *Innovative approaches to human resource development in agriculture in selected countries in Asia and the Pacific*. Resource paper submitted to the APO Study Meeting on Human Resource Development in Agriculture in Asia and the Pacific, 5-12 September 2000, Taipei, China.
- Tajima, S. 1995. "Agricultural education in Asia-Pacific". In: *APO Productivity Journal*, Summer edition. Tokyo: Asian Productivity Organisation.
- Tajima, S. 1997. "The state of agricultural education in selected Asian countries". In: *Trends and perspectives in agricultural education in Asia-Pacific*. Tokyo: Asian Productivity Organisation.
- Taylor, P. 2002. *Improving basic education in rural areas: prospects for contextualisation and the role of agricultural experience* (draft). Paper prepared for the International Institute for Educational Planning.
- Thai Thanh Son. 2001 *The role of distance education in TVET and the rural development in Vietnam*. Document prepared for the UNESCO/TVET Asia-Pacific Conference, Adelaide, 26-28 March 2001. Hanoi: Hanoi Open University.
- Underwood, M. 1998. "Base-line training needs assessment for community forestry in South Africa". In: *The Rural Development Forestry Network (RDFN) Paper 24d*, Winter 1998/99. Nottingham: Russell Press Ltd.
- UNESCO. 1997. *Technical and vocational education for rural development: delivery patterns*. Paris: UNESCO.
- USAID. Undated. *Education and training*. http://www.usaid.gov/educ_training.
- Van Crowder, L. 1997. *A participatory approach to curriculum development*. <http://www.fao.org/waicent/faoinfo/sustdev/EXdirect/EXan0017.htm>.
- Van Crowder, L.; Lindley, W.; Bruening, T.; Doron, N. 1998. *Agricultural education for sustainable rural development: challenges for developing countries in the 21st century*. Rome: FAO.

- Van den Bor, W. 1994. *Institutional development at BCA and international co-operation*. Report of a Mission to the Botswana College of Agriculture, Gaborone, Botswana, November 1994. The Netherlands: Wageningen Agricultural University.
- Wallace, I. 1997a. "Building better learning systems through the development of formal/non-formal linkages in agricultural and rural education". In: Lynch, J.; Mohan, C.; Mohan, S. (Eds), *Education and development: tradition and innovation*. Vol. 4. London: Cassell.
- Wallace, I. 1997b. "Agricultural education at the crossroads: present dilemmas and possible options for the future in sub-Saharan Africa". In: *International Journal of Educational Development*, 17(1), 27-39.
- Wallace, I.; Green, K. 2002. *Education for agriculture, rural development and food security in sub-Saharan Africa*. Draft paper prepared for the IIEP/FAO Project on the same topic. Reading, UK: International and Rural Development Department, University of Reading.
- Wallace, I.; Nilsson, E. 1997. *The role of agricultural education and training in improving the performance of support services for the renewable natural resources sector*. ODI Natural Resources Perspectives Paper 24. London: Overseas Development Institute.
- Wallace, I.; Mantzou, K.; Taylor, P. 1996. *Policy options for agricultural education and training in sub-Saharan Africa: report of a preliminary study and literature review*. AERDD Working Paper 96/1. Reading, UK: University of Reading.
- Weiss, C. 1996. *Exits from a declining sector: econometric evidence from a panel of upper Austrian farms 1980-90*. Working Paper No. 9601. Linz: Johannes Kepler University of Linz.
- Yixian, Z.; Yuping, C. 2001. *Survey report on situation of labour's education, employment and family income in some rural areas*. UNESCO research project on the role of rural schools in community development, Beijing.
- Zinnah, M.M.; Steele, R.E.; Mattocks, D.M. 1998. "From margin to mainstream: revitalization of agricultural extension curricula in universities and colleges in sub-Saharan Africa". In: *Training for agriculture and rural development 1997-1998*. Rome: FAO.

Chapter V

Higher education and rural development: a new perspective

Charles Maguire and David Atchoarena (Ed.)¹

Introduction

This chapter examines how agriculture universities, traditionally focused on crop and animal production, can redirect their mission towards the broader aim of supporting rural development. Although most of the work on rural development is still concentrated in faculties of agriculture, increasingly, addressing the needs of the rural people and space also concerns other departments and universities.

What does higher agricultural education (HAE) have to do to support rural development programmes? What adjustments does it need to make to understand the problems, identify the opportunities and take actions that will bring positive results to the process? It is important to agree that HAE or agricultural education will not be expected to be the sole source of education for rural development. HAE has a responsibility to provide teaching and learning opportunities for those who seek careers in the management of the rural development process or who will, at various levels, implement rural development activities and processes. In addition HAE has an opportunity to support the education and training for rural development that lies outside the present mandates of higher agricultural education entities. Ping (1998) suggests that today the university is a place for research, instruction and consultation. All levels of schooling can and should be able to turn to the university for support and help. To ensure success in further education, university faculties should give sustained attention to the quality of materials, teaching methodology and the

1. Based on case studies prepared by Keith L. Andrews (Zamorano), G.Y.Kanyama-Phiri (Bunda College), Dmytro O. Melnychuk (National Agricultural University of Ukraine), Eduardo Ramos and M^a del Mar Delgado (University of Cordoba), Liu Yonggong and Zhang Jingzun (China), Manuel Zertuche (ITESM).

assessment of results in school prior to university. To adequately address these two large challenges will require most HAE entities to make major adjustments to the way in which they view the needs of the rural areas and conduct their business.

Higher agricultural education in many developing countries is experiencing serious problems that impact on the quality of education and bring into question the relevance of programs offered. Included are inadequate funding, excess intake of students, poor infrastructure, declining quality of research and teaching, low faculty morale and high graduate unemployment rates. These problems and others, are not being dealt with because of internal and external factors that include declining political power of rural electorates, the impact of low prices for agricultural products, the competing demands of other components of higher education (HE) and the absence of policies for higher education for agriculture and rural development.

The crisis in HAE has been identified and debated in national and international settings but despite a plethora of exhortations and suggested solutions change has been slow. While HAE has had successes with education for production agriculture it has generally failed to make the curriculum and management adjustments needed to provide the education and services required by a changing agricultural sector and the transformation of the rural space.

The development community is renewing its efforts on rural development with fresh insights to the key factors that militate against rural development and poverty reduction. Countries are drawing up poverty-reduction strategies (PRS) with the co-operation of involved sectors and international funding is becoming available to implement these strategies. There are two interrelated approaches to education for rural development (ERD) that must be the responsibility of HAE. One is professional development for those who manage and implement the process and the other relates to the rest of the population within the rural space.

Higher agricultural education has a key role to play in ensuring that critical knowledge and skills are imparted to teachers and students; that other rural development actors appreciate the role of agriculture and sustainable natural resources management and the synergies involved in working together to build human resource capacity. HAE institutions have

to act quickly to clarify their roles or missions, establish their legitimate place in the higher education system and make the organizational and administrative changes necessary to provide a meaningful contribution to both the professional and general audiences concerned with rural development.

Bringing about the needed reforms will not be easy but a commitment to fully participating in ERD may catalyze wider change. However, expectations must be realistic for much of HAE still needs to pass through a fundamental change process, redefine its role and attain an acceptable standard in the HE system.

An important message of the chapter directed to HAE institutions is that in the competitive environment for scarce resources for higher education there will be little sympathy for special pleading for education for the agriculture sector alone. A well-researched, convincing and well-presented business plan showing that HAE meets the needs of agriculture, sustainable natural resources management and the population of the rural space will be needed to secure funding from public and private sources.

The chapter does not claim to present a model for HAE in supporting rural development, poverty reduction and food security because every HAE entity operates in a unique environment each with its own dynamics. The paper does stress the critical need for HAE to take the initiative, to convince policy-makers that support for education in the rural development process is essential and, above all, that HAE provides the leadership to articulate a vision for the future of higher level education that will include agriculture but will be able to serve the needs of all who inhabit the rural space.

The first part of the chapter briefly traces the modern history of higher agricultural education and notes the problems that developing country HAE institutions have in transforming themselves to meet new sector and stakeholder needs. It then looks at the phenomenon of rural development and suggests a generic role for HAE in this process. A section aimed at policy-makers follows that contains the desirable features of a higher education system and reminding policy-makers that HAE is part of the higher education system. The policy discussion then stresses the role of the state in guiding and supporting HAE and explores what HAE can bring to education for rural development.

The second part of the chapter results from five institution case studies conducted in five countries. It focuses on the analysis of the change process conducted in innovative HAE institutions. These examples of promising change in higher agricultural education are examined in detail in view of identifying the key elements that are likely to lead to successful reform. However, each scenario is first placed in its own socio-economic and educational environment in an effort to link the change process to specific contextual conditions.

1. Higher education for rural development: challenges and opportunities for higher agricultural education

1.1 Higher agricultural education (HAE) in perspective

Higher agricultural education evolved to educate the professional and technical human resources needed to push the frontiers of technology for agriculture. This was achieved by graduating degree holders with bachelors, masters and doctorates for careers largely related to production agriculture. Higher agricultural education has always been science based and many degrees were classified as “agricultural science”. Typically the programmes focused on natural sciences and mathematics, agriculture and varying amounts of social science. These were variously linked to research and production techniques that may, at various times, have included farm management, conservation agriculture, marketing and economics to produce graduates suitable for employment in research or extension in the public sector; production agriculture on family farms, as farm managers or in agribusiness with the private sector. The HAE that we know today began about 100 years ago although there are documented and frequently quoted programmes of agricultural education and training that go back to ancient China and the Roman Empire. Johnson and Bently (1992) stress the critical role of education in strategies for global agricultural and rural development. They suggest that this critical role is to develop the human resources that must mobilize, combine with and guide all productive factors and, eventually, distribute the benefits among society. “That role is played by the institutions specially established for teaching what is known about agriculture, discovering what is not known and disseminating the results to all participants in the agricultural system, particularly farmers and rural communities.” Change has been part of the evolution of HAE and the pace of change has accelerated in more recent times. Kunkel and Thompson (1996) suggest that the knowledge base of the sciences in colleges

(universities) of agriculture will likely respond in the future more to the needs of the consumer and stewardship of natural resources than to production aspects of agriculture. Van Crowder and others (1998) reporting on the concerns of regional roundtables on agricultural education indicate that “an analysis of these issues clearly demonstrates that agricultural universities, colleges and schools face major challenges in the twenty-first century. Meeting these challenges will require new educational strategies, innovative leadership and institutional reforms that take into account the current trends and factors that influence agricultural and rural development”.

HAE, as part of higher education, is the provider of third level agricultural education. It can be located in agricultural universities or in colleges or departments of agriculture in the wider university; diploma-granting (sometimes third level sub degree) institutes or polytechnics, short term – one- or two-year diploma or certificate courses that prepare technicians for entry level extension work or entry level technician work with the public or private sector, in-service training programmes for extension staff, farmer training of short duration, adult training and young farmer education and training. What appears to be a very comprehensive coverage of the agriculture sector’s human resource needs is in fact often weakly integrated. Bawden (1998) advocates a systems approach to agricultural education and diagrams the relationship of this system to the universe in which it operates. Typically, HAE is managed by ministries of education (MOE) and fits into the education system; sub-degree tertiary entities may be under the management of the MOE or the ministry of agriculture (MOA) and the diploma and certificate granting courses are usually under the supervision of the MOA. Separate oversight and management divides rather than unites the various education and training programmes and very few examples exist where bridging can be made between levels. For example, an extension worker with secondary education and a two year agriculture certificate plus considerable field experience can rarely bridge to a degree programme. A notable exception to this phenomenon is the Sasakawa Africa Fund for Extension Education programme (SAFE) (Naibakelao, 2000).

HAE, in common with higher education in general, has its problems. These have been brought to the attention of academia, policy-makers and the donor community over the past decade or so by many authors including Hansen (1990), Paalberg (1992), Ruffio and Barloy (1995), Van Crowder

and Anderson (1997), Wallace (1997), Warren (1997), Gasperini (2000), Maguire (1999, 2000) and are well known. In the interest of creating a baseline for understanding and against which to measure improvement, the main HAE problems are listed below. Many of the problems in their most obvious state can be found in developing countries but similar problems manifest themselves in various degrees in the more developed countries as well. Few HAE entities suffer from all of the problems listed at any one time but there are some common themes that provide a generic pattern across the HAE landscape:

■ Problems with higher agricultural education

- National support for agricultural education has weakened;
- Investment in agricultural education by governments, donor agencies and organizations has dropped dramatically from the highs of the 1960s and 1970s;
- Funding is inadequate to maintain physical facilities and support minimum standards;
- The combination of lower investment and support has contributed to a qualitative decline in many agricultural education and training systems;
- Teaching and research standards have dropped;
- Insufficient practical and job-related skills are taught;
- Political interference prevents rationalization of undergraduate and trainee intake, leading to overcrowding, decreasing per capita funding support, and low staff morale;
- Isolation has encouraged inbreeding in staff appointments;
- Agricultural education has tended to become isolated from mainstream academia;
- Curricula do not keep pace with changes in the sector and employer expectations;
- Unemployment of graduates, especially at tertiary level, is high;
- There is a change in the profile of students' backgrounds from mostly rural to increasingly urban;
- Programmes no longer attract the highest achievers from secondary streams;
- Information technology is underutilized.

While this generic list of problems associated with HAE presents an unhappy picture of agricultural education especially in least developed

countries (LDCs), a report by the (World Bank) Economic Development Institute (EDI, 1993) found the quality of learning in less developed countries to be in a state of crisis, with research activities under-funded and of questionable merit. The report indicates that the situation affects both low-income countries, such as those in Africa and South Asia, and middle-income countries, such as those in Latin America. Indications of such crises in quality are considered to be deteriorating physical facilities, poor library resources, overcrowding, inadequate staffing, and insufficient scientific equipment. Seven years later the higher education picture does not appear to have improved (see *Box 1* below).

Box 1. Higher education: the current situation

Higher education institutions clearly need well-designed academic programmes and a clear mission. Most important to their success, however, are high-quality faculty, committed and well-prepared students, and sufficient resources. Despite notable exceptions, most higher education institutions in developing countries suffer severe deficiencies in each of these areas. As a result, few perform to a consistently high standard.

Source: World Bank, 2000.

A closer look at the facts behind the problems in higher agricultural education reveals that some of the negative outcomes are internally generated while others are due to external stimuli (*Table 1*).

Table 1. Factors impacting on HAE quality and relevance

Problem areas	External factors	Internal factors
Weak national support for HAE	Decline in political influence of rural areas	Failure to make HAE case to and for policy-makers
Decreased investment in HAE by government and donors	Absence of national HAE policy and shift in donor focus to other development priorities	Inadequate lobbying by HAE leadership and fragmentation of agricultural education system
Declining standards in teaching and research, infrastructure and staff incentives	Low level of financial support from government and political pressure to accept increased numbers of students	
Isolation of HAE from the HE system	Remote location of HAE institution	Failure of HAE administration to adjust to multidisciplinary needs of a changing sector and to seek alliances outside HAE
'Inbreeding' in staff appointments	Absence of recruitment standards or failure to enforce such standards by ministries and public service commissions	Closed nature of HAE communities
Employer dissatisfaction with degree holder's knowledge and skills/high graduate unemployment	Reduction in public sector hiring	Failure of HAE to undertake market analysis. Contacts with potential employers and education stakeholders inadequate
Low level of information technology	Inadequate funding	Lack of IT skills in leadership teams

The key lesson from the HAE problem list is that the world's concentration on food production especially after the Second World War has weakened especially since the gains in productivity associated with the green revolution created a situation where global food production surpassed population needs. Regrettably, this did not necessarily translate to equitable distribution of food to all who needed it. Coupled with the lessening of fear of world-wide famine has been the continuing phenomenon of urbanization which has swung the political power base away from rural areas and led to a decrease in resource allocations for, amongst others, higher agricultural education. The impact of this has been declining physical and academic standards but not necessarily to declining enrolments. This latter phenomenon is often a response to political pressure on universities to accept more students and a desire of growing populations for third

level qualifications (Eicher, 1999). Change has also been registered in the profile of students entering agricultural programmes. Students in HAE are no longer purely rural in origin or necessarily from a farming background. No longer is the student applicant the best from his/her secondary cohort. No longer is agriculture the first choice of many of those who pursue degree courses in the field (Falvey, 1997). The urgency of 'getting a degree' often swells the ranks of HAE but the impact of those graduating on agriculture or rural development is not necessarily strong.

1.2 Signs of change

The era of concern with production agriculture was a golden one for investment in HAE (World Bank, 1992) and, in a sense, a dangerous one institutionally for it created an illusion of an ever growing need for graduates of a certain profile entering a buoyant market anchored by the public sector. Donors were generous with support and production agriculture reacted positively to a combination of science, investment and education with dramatic productivity gains registered in many parts of the globe. In too many instances complacency set in.

High input-high output production agriculture, despite its success in defeating the spectre of mass hunger and famine, began to have negative impacts on the environment and increasing demands for natural resources, especially forests and water, raised questions about the planet's capacity to continue to support a growing and resource-hungry population. The era of environmental conservation and natural resources management (NRM) was born. Many HAE entities were slow in reacting to this new concern and a large amount of the funding made available by donors and international organizations found its way to other parts of the education system. Falvey (1996) observes that transition to environmental courses has not always been smooth and, in fact, has only just begun. While many HAE institutions are struggling with survival and with catching up to the NRM/Environment movement a new challenge has emerged namely, that of rural development (RD).

Those advocating change in agricultural education are unanimous in their observation that HAE must go beyond a focus on production agriculture. This, despite the concern of many in HAE institutions, does not mean the end of agricultural education but it does mean that agricultural education will have to reinvent itself and be seen as part of a larger

education concern for rural development and food security. Despite visible successes in producing more food, scientists are concerned about stagnation of yield growth rates and yield declines and the unpredictability of climate change and environmental degradation. The agriculture battle has not been won and there is much to be concerned about (*Box 2*).

Box 2. An unfinished agenda for agricultural research

A new revolution in international agricultural research is needed. To be successful it will have to depart in significant ways from the Green Revolution of recent decades. The development of high-yielding varieties for the high-potential lands will continue to be vital. But it must be linked to the crucial questions of sustainability. We need urgently to know why yield growth rates are slackening in many countries and, in particular, why on some of the most intensively cropped lands there are real yield declines. Where environmental degradation is occurring we have to seek ways of reversing salinization, water-logging and the fall in water-tables. More sustainable production in the future will also depend on less use of pesticides and inorganic fertilizers and on reduced emissions of greenhouse gases and other global pollutants.

Source: Conway, 1997.

Falvey (1996) suggests that agricultural education needs to move beyond production agriculture and adjust to societal expectations related to NRM. Schuh (2000) notes that colleges of agriculture are typically organized around the biological and other agricultural disciplines while the social sciences have a much lower priority and then only with modest and weak investments. It is important to meld together the various disciplinary co-operative efforts, independently of whether one is considering teaching, research, or extension. There are very few problems in today's world that can be solved by knowledge from only one discipline. The challenge is to have strong disciplinary departments, while at the same time engaging them in collaborative endeavours. Johnson and Bently (1992) suggest that the important point is that the higher agricultural educational institutions have gone far beyond the earliest and most urgent mission of teaching individuals and teaching them almost exclusively about production agriculture. Added most often are the non-teaching aspects of knowledge generation and dissemination (research and extension) needed in the service of society for the solution of its problems, first the domestic ones and then

those reflecting the interdependence of the modern world. Another clue to the changing nature of the world's agricultural institutions is the operational conception of 'agriculture' making it more inclusive, reflecting the use of off-farm resources on food and fibre production systems, consumer concerns about quality and cost and the skills and technologies that integrate the physical farming part of the food chain with all the post-harvest human uses and impact.

1.3 Providing support to rural development: implications for HAE

If higher agricultural education is to play an active and constructive role in rural development it will have to adjust its programmes to new and nontraditional topics, new teaching and learning models, new partnerships with academia, research organizations and rural space stakeholders, expanded representation in governance and continuous dialogue with policy-makers. Some of the realities that have to be addressed by HAE will include:

- Curriculum to be based on labour market surveys;
- Stakeholders must have input to HAE decision-making;
- Intakes (and outputs) must reflect both sector and rural space development needs;
- Incentives for teaching quality in place;
- Faculty members need to reflect a diversity of backgrounds and experiences;
- Closer ties with the wider education system;
- Team teaching within HAE disciplines and with HE system;
- Rural development practitioners as members of teaching teams;
- Researchers used as teaching resource;
- Practical work by students on university farms and in communities, including decision-making experience;
- Student attachment to rural enterprises including communities, farms and agribusinesses;
- Student evaluation of programmes' needs to be introduced;
- Co-operation with and inputs supplied to basic and secondary education;
- Focus on non-formal adult education and training programmes;
- Partnerships with other sector ministries and concerned stakeholders in the public and private sectors and with society at large;

- Research and analysis of decentralized government needs and provision of services;
- Policy advice to government;
- Staff training provided as contribution to morale and to education quality;
- Visiting scholars – teachers and researchers encouraged;
- Increased use of information technology;
- Greater stakeholder representation in HAE governance.

If HAE is to make a meaningful contribution to the process of rural development it must first understand the scope of that process and analyze the educational needs of stakeholders. Lele (1975) suggests that rural development has three important features with substantial implications for how rural development programmes are designed and implemented:

- (i) Improving the living standards of the subsistence population involves mobilization and allocation of resources so as to reach a desirable balance over time between welfare and productive services available to the subsistence rural sector.
- (ii) Mass participation requires that resources be allocated to low-income regions and classes and that the productive and social services actually reach them.
- (iii) Making the process self-sustaining requires development of the appropriate skills and implementing capacity and the presence of institutions at the local, regional and national levels to ensure the effective use of existing resources and to foster the mobilization of additional financial and human resources for continued development of the subsistence sector. Self-sustenance thus means involving, as distinct from simply reaching, the subsistence populations through development programmes.

Bently and Mbithi (1976) suggest that the impetus for rural development – and by implication for the types of educational opportunities that are needed – must spring **from the people themselves**. For this to happen, people must develop new ideas about themselves and the world around them, new attitudes and new hope for the future. This kind of **transformation of the individual is essentially what education for rural development is all about**. In contrast to the conventional notion

that equates education with schooling, education should be equated with **learning** as a lifelong process involving a great variety of experiences. However, to shift from the narrow school view of education to this wide **lifelong** view requires a change of focus that is extremely difficult for anyone whose thinking has been conditioned by very traditional formal education programmes. Kunkel and others (1996) suggest that in the real world of today, if an education policy framework for agriculture is to succeed, it must be multidisciplinary, including people and knowledge that understand social science, economics and now cultural anthropology as well as the disciplines of agricultural sciences, nutrition and natural resources.

How well equipped are present day HAE entities to shape programmes for the professional and technical cadres that will lead the process of rural development? How well do the HAE entities understand development needs and the dynamics prevailing in an ever-changing rural space. This would be a big challenge when dealing with the traditional agriculture sector but when sustainable natural resource management, sustainable agriculture and rural poverty alleviation are added in an era of decentralization of government control of the planning and implementation of development, the provision of services and community driven development (CDD), HAE entities have an even bigger task. In addition, HAE's contribution to true rural development must also include involvement and support for the broader education for rural development that encompasses basic, secondary, vocational and adult education provided for all people in the rural space. It further includes knowledge and skills for off-farm employment and the provision of life long learning opportunities (*Table 2*).

Table 2. HAE and education for rural development

Type of support by HAE	Input	Output
Professional and technical education for rural development	HAE delivered programmes. Joint programmes with other parts of HE system. Contributions to other academic programmes (social, health, education, economics, infrastructure, environment)	Human resources with knowledge and skills to manage and implement the process and detail of rural development
Policy advice on education for rural development	Vision, strategy, analysis and data for policy-makers and leaders from other sectors and society at large concerned about rural development issues	Rational and sustainable education policies for agriculture and the rural space together with the resources needed to implement the policies
Support to primary, secondary, vocational and adult education for the rural space	Curriculum advice and input for each level. Materials preparation for each level. Teacher training related to agriculture and natural resources management in curricula. In-service training for education for rural development practitioners	Key knowledge and skills for agriculture, NRM and related agribusiness activities available to the population of the rural space. Links between agriculture and NRM and the environment, health, nutrition and infrastructure clarified
Lifelong education for rural space population and others	Structured learning activities and debate on agriculture and NRM issues and their importance to rural development. Short duration training for policy-makers, politicians and civil society leaders	An informed public supportive of the process of rural development from a position of knowledge and factual information. Alert and aware policy-makers and political leaders who provide sustainable support for rural development

1.4 What is required to bring about change in HAE?

Given the generic problems with HAE, already detailed, what needs to be done to enable HAE to play its critical part in what is becoming a major development undertaking of the twenty-first century – rural development and poverty alleviation? There are two critical areas where change can be initiated and supported. First, there must be national policy on HAE and indeed on education for rural development in general. These policies dealing with HAE need to be connected with the ones on education for rural development within the wider education policy rather than with

the established and ‘traditional’ agricultural education and ‘rural education’ that are seen to be wanting. Second, HAE institutions themselves must be committed to catalyzing change. Indeed HAE institutions must be able to advise and guide policy-makers on the problems and solutions to the provision of education and training for agriculture and rural development.

Experience shows that change will never take place if HAE institutions fail to take the initiative. Leadership is critical in bringing about change. Someone or some group needs to enable the institution to vision a future. Bawden (1998) suggests that multiple futures should be explored before settling on one. The vision must be publicized and ‘sold’ within the institution and to those who have an interest, the stakeholders. Foster (1999) puts forward higher education change principles amongst which are:

- (i) **In order to change an institution, you must start everywhere at once.** In changing a higher education system you must address structural issues, curricula, resource allocation, access, collaboration, technology and other variables that will influence the change you desire;
- (ii) **Change must be value based and vision driven.** Vision and values must be determined in collaboration with the stakeholders and the vision must be that of a preferred vision, not just trend driven. Being value based and vision driven is even more essential in times of rapidly changing systems that come about during periods of technological innovation and revolution;
- (iii) **There must be a critical mass (but not necessarily a majority) for change to occur.** A good example of this can be found in the example of the University of Cordoba in Spain where a dedicated group of faculty working inside the organization and with external stakeholders managed to convince the university to launch a professional rural development programme in 1995 (see *Part 2*);
- (iv) **Change must occur within the resource structure of the institution – not just from philanthropic funds;**
- (v) **For institutional change to occur, policy must be impacted, capacity built and budgets reallocated to new and more relevant programmes;**

- (vi) **There is strength and power in collaborations and partnerships that allow complementary solution finding rather than competition for scarce resources.**

McGrath (1999) believes that reform in any university anywhere in the world cannot occur unless there is a vision passionately believed in and furthered by leaders. There may be ferment for change within a university and a desire for adaptation. But the change will not occur unless there are leaders willing to come forward and provide direction and articulate a vision that can unite men and women to work for needed change.

Lee (1997) describes the reorganization of agricultural education in Korea (agriculture is taught in primary, junior secondary, general high school and universities). He notes that the university is for the advancement of learning and ideas. Research generates knowledge about agricultural science and technologies and rural development. Critical data generated are made available for decision-making about the allocation of scarce resources for development. The extension programme of the college of agriculture is designed to support policies and plans for rural development. The agriculture textbook research and development committee in the college of agriculture and life sciences at the Seoul National University, under the auspices of the Ministry of Education, develops agriculture textbooks for use in agricultural high schools. The textbooks address current and future problems that students and communities face. Colleges of education or of agriculture also provide training for future teachers of agriculture in junior and senior high schools. Agricultural education is offered in two universities from the college of education and in a third from the college of agriculture.

Szekely (1998) details changes in Hungarian higher agricultural education using the example of Godollo University of Agricultural Sciences. The university began in the 1950s specializing in the agricultural sciences. It had three faculties – animal husbandry, agronomy and agricultural economics. Later, an agricultural engineering faculty was added. After 1956 the three faculties were merged giving a boost to the quality of research. In the 1960s there was a tendency to separate and over-specialize. In 1967 and 1968 an Agronomist-Manager programme and technical education were added giving the university strength in technical areas for agricultural development. At the end of the 1980s with the need for business management becoming more urgent a faculty of Economics and Social Sciences was created in 1987. At that time the need to analyze and develop

the rural areas was recognized and the social sciences side of the new faculty was ideally placed to undertake this work. A process of true diversification began which went beyond the boundaries of pure agronomy and led to the education of professionals in a much broader view which moved away from a narrow focus on agriculture to a broader approach of agriculture and rural development. In 1990 the Institute of Environmental and Landscape Management was created to deal with natural resources management. The university recognized that in dealing with natural resources it was not possible to approach these areas from a purely production and technology-oriented viewpoint so the care and preservation of natural resources had to be advocated. A much more concentrated, multifaceted and interdisciplinary look was given to the goal of agricultural development. The university then realized that rural development would not take place through specialized activities in agriculture and environment but would need to focus on complex regional, infrastructure, economic, service and other developmental directions. The importance of transportation and communications structures was noted and a decision made to integrate with the Ybl Miklos Polytechnic College, an institution that deals with infrastructure and urban development. The polytechnic has been successful in planning and development and in alternative architectural styles. This fits well with Godollo's rural development profile. The university is planning integration with a Teacher Training College as part of a plan to launch a Human Resources Manager programme. Finally, a Centre for Rural Development and Co-operative Extension Service was founded with a view to meeting the needs of market-oriented stakeholders.

The lesson from Godollo University is that for 50 years the administration had been alert to needs of a changing agriculture sector and then saw that the environment and later rural development were important. The university analyzed the situation and came up with solutions and, most important, they took action. Some of the actions needed partners and the university was willing to reach out and integrate with others who had a comparative advantage. Today Godollo University is among the leaders in Central and Eastern Europe.

1.5 Desirable features of higher education

Recent thinking about higher education in developing countries and about education sector strategies has much relevance for policy-makers who have the responsibility for ensuring that education for rural

development has the vision, strategy and implementation resources necessary to make an impact on revitalizing the rural space. The Task Force on Higher Education and Society (World Bank, 2000) presents nine desirable features of a higher education system all of which apply to HAE. These are:

(i) Stratified structure

Higher education is under great pressure to improve the quality of the education they offer – but also to educate increasing numbers of students. A stratified higher education is a hybrid that marries the goals of excellence and mass education, allowing each to be achieved within one system and using limited resources. A stratified higher education comprises one tier that is oriented towards research and selectivity and another that imparts knowledge to large numbers of students. Successful HAE entities enrich teaching and learning programmes by incorporating the findings of research. HAE policy must emphasize the importance of this link.

(ii) Adequate and stable long-term funding

Higher education institutions can thrive only if their funding levels are adequate, stable and, subject to good performance, secure in the long term. In many areas insecure funding stifles the ability and the incentive to carry out research. Governments have a crucial role to play in providing stability.

(iii) Competition

Traditionally there has been little competition within higher education systems. Competition is exceedingly difficult to achieve through central decree, but requires a high degree of autonomy for academic institutions, allowing them to exploit their strengths and overcome weaknesses. One common indicator of competition is faculty mobility between institutions, which tends to promote a healthy academic environment through intellectual cross-fertilization. Declining standards of teaching and research in HAE can be attributed in part to its isolation from competition.

(iv) Flexibility

Higher education institutions need to be flexible if they are to be most effective. They need to be able to adapt quickly to changing enrolment levels, to the rise and fall of different fields of study and to changes in the

mix of skills demanded in the labour market. Open institutions are more likely to keep pace with significant external changes. Scholarly interaction within and between countries, frequent curriculum review and strong connections to the world stock of knowledge (through substantial investments in Internet access, for example) are all important.

(v) Well-defined standards

Effective higher education institutions articulate clear standards and set for themselves challenging goals that are consistent with the needs of their societies and labour forces. International standards are especially relevant in a globalized economy. Some standards are needed for degree requirements when it comes to student performance, faculty qualifications and achievement. A culture of accountability is also essential, allowing improvement (or deterioration) to be continually monitored and rewarded.

(vi) Immunity from political manipulation

Higher education institutions are effective only when insulated from the undue influence of political parties, governments or short-term political developments in educational affairs. Excluding partisan political interests from the operation of a higher education institution helps to safeguard merit-based decision-making, one hallmark of an effective higher education institution. Political pressure to expand enrolment has been an unfortunate feature of HAE in recent times and has led to a lowering of standards of education and facilities.

(vii) Well-defined links to other sectors

Higher education does not operate in isolation. It must pay attention to secondary education provision in order to take account of student preparation. It will also benefit primary and secondary education through training qualified teachers and demonstrating potential educational innovations. Quality higher education will also increase students' aspirations at the primary and secondary levels, leading to higher standards as students compete for tertiary education places. Strong links between higher education and its environment can generate many beneficial effects, including significantly augmenting the resources available, helping to overcome intellectual isolation and allowing the achievement of 'critical mass' in a larger number of specialized fields. For example, advocates for

higher education and industry can work together to ensure that graduates have the skills that industry needs. Advocates for higher education also need to work comfortably with government agencies responsible for policy setting and finance.

(viii) Supportive legal and regulatory structure

Higher education institutions flourish in a legal and regulatory environment that encourages innovation and achievement, while discouraging corruption, duplication of effort and exploitation of poorly informed consumers. In many institutions, initiative is stifled by counterproductive legal constraints and centralized decision-making. Higher education is focused on people – regulation needs to foster, not hamper, human potential.

(ix) System-wide resources

Many tools for improving higher education work best when developed centrally and shared widely. Such tools include management information systems, standardized tests, curriculum and ‘knowledge banks’ (repositories of information accessible through electronic means). They effectively and efficiently spread the financial and technical burdens of higher education development, allowing multiple institutions to work together. No institution of higher education can hope to serve its students or the national interest, without developing a robust technological capacity. Higher education institutions need to encourage all constituent institutions, both public and private, to incorporate advances in computing and communications technology into their administrative structures, their teaching and their research. HAE can expand its reach to remote rural areas through distance education if it has access to appropriate technology and the capacity to use it effectively. In the 21st century this capability is an essential attribute of higher education.

1.6 Policy directions and issues

1.6.1 The state has a critical role to play in guiding and supporting higher education

Higher education and HAE cannot be left to market forces in the hope that these will provide the type of education that serves the national and public interest. The government must ensure that the public interest is

served and that basic research relevant to the country's needs is undertaken. Within the framework of state control governments own, finance, and operate higher education institutions. Without careful monitoring this can lead to politicians appointing vice-chancellors and ministries dictating degree requirements and curricula. Instances of political pressure forcing HE and HAE institutions to increase student intake with the consequent dilution of education, facilities and morale are not uncommon. It is therefore necessary to create buffer mechanisms to provide a balance between state responsibility to protect and promote the public's interest with an individual institution's need for academic freedom and autonomy (World Bank, 2000).

1.6.2 A balance is needed to enable HAE to function effectively

To provide the balance, HE and HAE, need the support of formally constituted and credible entities that help make the case for education and its growth and delivery to the organs of government with the legal and fiscal power to ensure that adequate support is available and that the public and national interest is being served. Buffer mechanisms consist of *statutory bodies* that include representatives of the government, institutions of higher education, the private sector and other important stakeholders such as NGOs, farmer's organizations and student organizations. Among these may be found:

- *Councils of higher education, including HAE* to advise the government on the size, shape, and funding of higher education; often they are also responsible for quality assurance, promotion mechanisms and accreditation;
- *Research councils* or agencies that fund and promote research;
- *Professional councils* that focus on specific areas of higher education; and
- *Governing councils (or boards of trustees)* that guide and advise education institutions and policy-makers. These councils must be representative of all concerned stakeholders.

To be effective, these bodies require clear mandates, well-established operating procedures and full autonomy from both government and academia (World Bank, 2000).

1.6.3 Rural development presents a major challenge for HAE

Many have argued that HAE must change and, indeed, change pathways have been identified and some renamed and reoriented courses have emerged over the past decade or so but widespread and large-scale change examples remain elusive. The challenge now is for agricultural education to accept or ignore the opportunity to become part of a major shift in focus from production agriculture to rural development. HAE is now in a third wave of change that impacts heavily on its role – the first being production agriculture, the second environment and now rural development. It could be argued that much of higher agricultural education missed the leadership opportunity offered by the second wave of change despite widespread support from a broad spectrum of rural and urban stakeholders and is still struggling to catch up. The focus on rural development offers another opportunity to HAE to claim and reclaim leadership in spearheading what promises to be a major international attempt to solve the problems associated with revitalizing rural areas, poverty reduction and food security.

1.6.4 What can HAE bring to ERD?

It can educate the professional and technical personnel needed to promote sustainable agriculture and take leadership in implementing the process of rural development. It can bring critical agriculture messages to the education system at primary, secondary and adult levels. It can tap into the desire of millions for life long learning. It can be the voice of reason and factual information in emotional debates about real or apparent food quality and food safety issues. It can equip teachers of the education system with the knowledge and skills required to bring the agriculture message to that system's enrollees. It can be an invaluable resource for policy-makers.

It can be a visible lobbying force for comprehensive education for rural development if it can fashion clear and logical arguments and support them with indisputable data but it cannot do this without a fresh outlook on rural development needs and making the organizational changes needed to be effective. Above all, it can make a major contribution to the achievement of the goal of rural development, poverty reduction and food security.

1.6.5 What specifically can HAE do to initiate the change process?

The widespread interest in rural development and poverty alleviation offers an opportunity that should be grasped. HAE can lead a process of defining the needs of the rural development and poverty alleviation process by:

- (i) Inviting key stakeholders to engage in dialogue;
- (ii) Once needs are identified and agreed upon stakeholders can decide on their roles in supporting and guiding the process;
- (iii) The role and mission of HAE in supporting ERD should emerge from this exercise. HAE's detailed role will most likely show that internal organizational adjustments have to be made in HAE if it is to fulfil its role effectively;
- (iv) Armed with this analysis HAE is in a strong position to work on its own reform agenda. Here again the key reform element, leadership, emerges. Without the vision, the belief, the energy, the ability to communicate effectively and the willingness to form partnerships, reforms will not take place.

1.6.6 Funding is critical to the reform/change effort

Reform of HAE entities and ensuring their involvement with education for rural development is not cost neutral. If, for example, the HAE entity is to support other education and training levels with teacher training, teaching materials and team teaching, funds to enable this to happen must be available. Without such an incentive little change will take place. Policy-makers need to back all new or revised policies with the resources required to fully implement them. The Task Force Report (World Bank, 2000) points out that a frequently neglected policy is to allow individual institutions the autonomy to develop new ways of raising revenue. Income-generating activities could include executive training programmes, marketing the experience of faculty and offering services such as laboratory testing and rental of facilities. The report notes that it is necessary to make it legally permissible to receive such funds and to use them in a discretionary manner, and also to draw limits on the extent to which proprietary research can be conducted.

2. Higher agricultural education institutions: lessons from five case studies

2.1 *The scope and issues*

Once focused on the provision of agronomists for the farm economy, higher agricultural education (HAE) institutions are now facing new challenges, such as a decline of employment in agriculture, competition from other providers, expanding students' diversity and the digital divide between rural and urban areas. Over the years, innovative HAE institutions managed to reinvent themselves in order to meet the changing needs of rural areas and economies. Drawing from five case studies of institutional change, this section presents innovative strategies and options that can contribute to improving delivery, quality and relevance of provision.

The six case studies selected in *China, Honduras, Malawi, Mexico, Spain* and the *Ukraine* illustrate contrasted contexts and experiences. Contrary to the other contributions, the study undertaken in China embraced a sector-wide perspective, looking at the broad reform of HAE institutions. However, when appropriate, specific information is provided on the experience of the *China Agricultural University*, where direct investigations were conducted.

The evolution of the *Bunda College* (Malawi) provides an image of the strategy developed by a relatively small institution facing strong financial constraints and a challenging labour market transformation in an overall low-income environment.

Zamorano (Honduras) documents a process of institutional adaptation in a region affected by rapid changes in agrarian structures, modernization of agricultural production and a significant migration from the countryside to cities, while rural poverty continues to spread.

The *University of Cordoba* (Spain) and, to a lesser extent, the *Instituto Tecnológico y de Estudios Superiores de Monterrey* (ITESM) Mexico, are both undertaking deep transformation in an era of declining rural population and agriculture labour force – particularly in Spain – due to the spread of highly mechanized and technologically advanced production. Both countries are also fully embarked into the movement of globalization

within the European integration process (*University of Cordoba*) or within the North American Free Trade Area – NAFTA – (ITESM).

In the Ukraine and China, institutions are undergoing fundamental reforms in a process of societal transition. However, the path followed by the two countries is significantly different. Whilst the *National Agricultural University of Ukraine* (NAUU) has undertaken a rapid transition towards ‘Western’ organizational standards, in China the reform of HAE follows a carefully planned process combining revised forms of central governance with increasing decentralization and institution level accountability. The reform in China also involved consolidating agricultural universities with other specialized higher education institutions to form comprehensive universities.

The following tables provide additional information on the national environment of each case study and on the profile of the studied institutions. In itself this basic background illustrates the heterogeneity of situations and challenges that the higher agricultural education (HAE) institutions face. Yet, beyond this complex tapestry useful general lessons can be drawn from specific cases.

Table 3. Comparative background indicators

	Population (in millions) (2000)	Percentage rural (2000)	GDP (current US\$) in millions (1999)	GDP per capita (1999)	Share of agriculture % GDP (1999)	Labour force in agriculture (% total) (1997)	Enrolment tertiary education per hundred thousand inhabitants (1996)	Tertiary level GER % (1996)
	a	a	a	a	a	b	c	c
China	1,262.5	67.9	989,465	3,617	18.0	70.9	473	5.6
Honduras	6.4	53.1	5,387	2,340	16.0	32.7	985	10.0
Malawi	10.3	84.6	1,810	586	38.0	86.3	58	0.6
Mexico	98.0	25.6	483,737	8,297	5.0	36.3	1,739	16.0
Spain	39.5	22.4	595,927	18,079	4.0	6.7	4,254	51.4
Ukraine	49.5	32.0	38,653	3,458	13.0	15.0	2,996	41.7

Sources: a: *World Development indicators 2001*, World Bank.

b: *World Education Report 2000*, UNESCO.

c: *World Employment Report, 1998/99*, ILO.

Table 4. Profile of studied institutions

Studied institutions	Year of establishment	Enrolment	Faculty	Structure	Status
Bunda (Malawi)	1966	500	70	One college of the University of Malawi (other colleges located elsewhere)	Public
Cordoba University (Spain)	1972	n.a.	n.a.	One campus	Public
ITESM (Mexico)	1948	95,697 (including 530 in the School of Agriculture)	n.a.	One major campus (Monterrey), 28 regional "campi"	Private
NAUU (Ukraine)	1898	8,000 (full time students only)	2,000	One major campus (Kiev), six regional institutions	Public
Zamorano (Honduras)	1952	900	n.a.	One campus in Honduras	Pan American private institution

Sources: Case studies conducted for the IIEP/FAO review.

The most significant and eloquent change within HAE institutions is probably the redefinition of their missions. Hence, HAE institutions are evolving into multipurpose institutions geared towards meeting the local economy's needs in skills and knowledge. In many countries, serving and promoting the development of agriculture through *agricultural education*, *research* and *extension* have long been the three fundamental missions of HAE institutions. Within this framework, the combination of higher education with extension services for the farm economy formed probably the most visible link between institutions and farmers. Today the linkages between the institutions and their environment are becoming much broader and complex as reflected in several of the case studies.

For instance, the *Instituto Tecnológico y de Estudios Superiores de Monterrey* (ITESM) used to define its mission as follows:

"The ITESM has the fundamental mission to train undergraduate and graduate professionals with levels of excellence in the field of their speciality" (extracted from the IIEP case study by M. Zertuche). Recognizing the need to maintain its relevance within a changing environment, the ITESM reviews its mission every ten years.

In 1995, the mandate of the institution was redefined in a much larger perspective, including, beyond education, specific reference to the *employment, economic and political* domains. The ITESM is now expected to contribute to:

- job creation;
- international competitiveness;
- democratization;
- improving education.

The main challenge was to move from a mission-oriented situation to ‘*produce graduates with levels of excellence in their area of expertise*’ to one of ‘*training future professionals with a strong commitment to the development of their community*’. Consequently, several strategies have been designed to increase the contribution of the students to the welfare of the community. For instance, students must spend a period of 500 hours in a *Special Community Service*, in programmes such as (i) Children Nutrition, (ii) Adult Education, (iii) Micro-enterprises Development, (iv) Technical Service Consulting and (v) Sustainable Production Systems, etc.

A similar trend is perceptible at *Bunda College*, where its mission was rephrased in 1999 in the following terms:

“To advance and promote knowledge, skills and self-reliance for:

- sustainable food production and utilization;
- improving income, food security and nutrition of the rural and urban populations and
- conservation and management of bio-diversity, natural resources and the environment through the provision of information services, teaching and training, research, outreach and consultancy in response to national and international needs.”

The vision of HAE institutions, as reflected in the way they are redefining their missions, has deep repercussions on the nature and the content of their activities as well as on the resources, mechanisms and procedures they mobilize to implement their new mandate. Although the selected case studies cannot pretend to fully reflect the diversity of pathways followed by HAE institutions, they contribute to locate the most common obstacles and identify criteria for success.

2.2 *The transformation and diversification of HAE institutions' activities*

2.2.1. Provision of knowledge and skills to students

The forces shaping the transformation of HAE have changed the composition of the student body as well as the programmes offered and the learning process.

- The students

Probably more than any other type of higher education institutions, *schools of agriculture* are facing a diversification of their student body.

Before 1980, a big proportion of ITESM students were coming from rural areas. This trend declined significantly, as the urbanization of the Mexican population has prevailed in the past two decades. As a result, the origin of HAE students shifted more towards urban areas. Today, 50 per cent of the total student population of the agriculture school comes from the Monterrey metropolitan area and only one per cent of the total population come from rural areas.

The evolution felt at the ITESM is indicative of a broader trend towards a 'de-ruralization' of HAE intake. This movement poses two main challenges to HAE institutions. *First* they must adapt their courses to a population with very little or no prior agricultural and rural experience. *Second*, it is often feared that because of their urban origin, most graduates will tend to look for job opportunities in cities. Eventually, this tendency could be detrimental to rural development.

China provides a clear illustration of this threat. Hence, HAE institutions' graduates are hardly willing to dedicate themselves to agricultural and rural development, although most of the students (about 60 per cent in the provincial agricultural universities) come from rural areas, including about one-third from poor areas. After graduation, most students prefer to look for a job in urban areas, even for positions not directly related to their field of study, rather than working in their remote and poor hometowns, although for decades the government has encouraged, including through incentives, graduates to return or to go to rural remote areas, the situation has not improved very much.

Students interviewed at the *China Agricultural University* (CAU) reported the following reasons for explaining their labour market preference:

- poor working conditions and poor professional advancement prospects compared to the situation in the big cities of the Eastern and coastal areas;
- poor transport and communication facilities resulting in restricted personal development opportunities;
- poor living and social conditions resulting from the lack of community facilities, such as medical services and schools;
- low salary scales.

This context causes a serious brain drain from rural areas to cities. Accumulated human capital tends to flow out of poor communities without any contributions to their development. This forms a major obstacle to poverty reduction and rural development.

To break this vicious circle Government recently reformed the admission policy to promote the enrolment of students, who are already working at the county and township levels of rural areas and they are now committed to return to their hometowns. This mechanism, known as the '*employment-oriented admission system*' constitutes a significant component of the institutional reform of HAE in China.

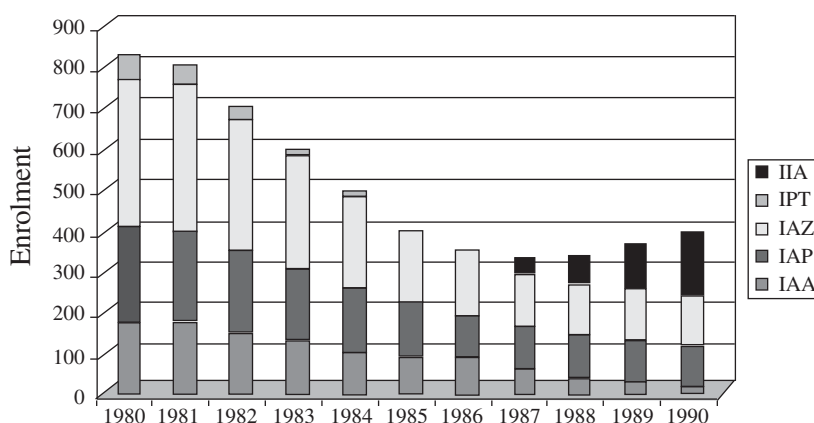
In many countries, besides depressed labour market prospects, the increasing competition of other higher education providers has contributed to make admission into HAE institutions problematic. Due to less competitive employment opportunities compared with other sectors, such as information technology, electronic industries and other high-tech sectors, HAE institutions are increasingly in competition with other universities to admit good candidates.

In China, the best students do not select HAE institutions as their first option after they pass the national enrolment examination. This affects the entire education quality of HAE. Agricultural universities do not efficiently conduct promotion campaigns. Both student candidates and their parents do not have sufficient information about agriculture and agricultural universities. In the meantime, integrated science and technology universities, MBA programmes and high-tech faculties enrol the best candidates. The competition for the local agricultural universities was the most unequal. That was a reason for merging them with provincial science and technology universities.

With some exceptions like China and Malawi, in many countries the drop in intake level and total enrolment became a major problem for HAE institutions. Reversing this trend and sustaining the attractiveness of their offerings have called for new strategies.

In the 1980s, the student enrolment at the School of Agriculture of the ITESM declined significantly and it reached the lowest level in 1987 with numbers similar to that of 1965.

Figure 1. Student enrolment evolution at the School of Agriculture (ITESM) by degree programme (1980-1990)



Source: ITESM Academic Statistics Department (unpublished document).

IIA: Food Industries Engineering; IPT: Agronomy Engineer in Parasitology.

IAZ: Zootechnology Engineering. IAP: Agronomy Engineer in Production.

IAA: Agronomy Engineer with a minor in Administration.

The large decline in student enrolment in the agronomy degree programmes was attributed, in part, to the severe economic crisis of 1982, which strongly affected the agricultural sector. In response to this decline, ITESM opened in 1987 a degree programme for *Food Industries Engineers* [*Ingeniero en Industrias Alimentarias* (IIA)]. The increase in the student population was felt in the 1990s and was reinforced with the introduction of a *Bachelor in International Commerce with a minor in Agribusiness* (LAN).

In the *Ukraine*, after a sharp drop in 1993, NAUU enrolments have followed a steady increase suggesting that the institution managed to cope with its new environment.

Besides maintaining the attractiveness of HAE and retaining graduates in the rural space, enrolling more female students has been a constant challenge for most HAE institutions in developing countries. Lower participation of girls in the education system, traditions regarding the gender profile of high level agricultural occupations and also specific cultures, including 'institutional cultures', are among the factors leading to this situation. In some cases the introduction of specific measures seems to have produced interesting results.

For several decades enrolment at *Zamorano* was only male. In the early 1990s female students represented approximately 11 per cent of total enrolment. This proportion reached 30 per cent in 2002.

During the 1980s, *Zamorano* became infamous for the degree of hazing which took place and the administration made sporadic attempts to suppress this situation. There were mixed messages regarding the impact and acceptability of hazing. As it went more underground, it became increasingly violent and lost any pretension to alleged value.

At this same time, women, although they were doing very well academically at *Zamorano*, were not accepted as legitimate members of the campus community. Until the early 1990s, women were studying in an institution that maintained its all-male culture.

In 1993, a decision was taken to attract more women to *Zamorano* in order to create a critical mass. This was done through the creation of student residences replacing the classical dormitories. In the residences male and female students of all nationalities and all age groups, live together and engage in cultural, academic and social activities under the guidance of house parents or *padrinos*. The first residence was created in 1994 and by 2002 all students lived in a residence. By becoming members of the same living unit, monitored by *padrinos*, male and female students better understood one another. By 1999, the increasing proportion of female students, their academic success and the creation of the residences, contributed to decreasing significantly harassment and discrimination against women.

Building up on this experience, in 2001 *Zamorano* introduced the *SIVE Programme* or *Integrated Student Life System*. This initiative has become the permanent basis for a solid foundation of leadership and character formation. It involved the creation of a group of *Zamorano* graduates working at the institution and supported by their colleagues from the *International Graduate Association*. This group not only successfully implemented a zero tolerance programme for hazing, but also converted the issue into the focal point for introspection and discussion. This programme has transformed the ideas among students as to what leadership and respect are all about.

The *Bunda College* provides another illustration of the efforts made by HAE institutions to admit and retain more women. Initially the proportion of female students was about 10 per cent. This share increased through the 1980s and 1990s to reach a peak of 30 per cent in 2002. The objective is to reach 50 per cent by 2004. The progress made in recent years is largely due to the implementation, by the college, of information campaigns in secondary schools and to the building of accommodation facilities specifically for female students. But more is needed to achieve the set target. The decision to allocate donor-funded financial support to female students, to cover enrolment fees, constitutes one step further in this direction.

- Academic organization and curricula

Updating existing programmes, developing new ones and opening courses in different areas, are part of the usual response developed by higher education institutions to keep up with the expansion of knowledge, the rise of new technologies and the renewal of vocational skills and occupational structures. But the revision of curricula is also strongly correlated with the diversification of HAE institutions' missions.

Besides technical knowledge and socio-economic relevance, the increasing recognition of core competencies contributes to curricula change in HAE institutions. Furthermore, the organization of the curricula is affected by a trend towards modularization and efforts to develop multidisciplinary approaches to teaching.

Experience reported in the case studies suggest that HAE institutions find it very easy to add new programmes to meet new needs. It is often

tougher for them to adjust and to innovate by changing the focus of existing programmes. Reforms involving the elimination of obsolete programmes or the deep transformation of existing ones are even more painful and sometimes difficult to conceive. Most of the institutions studied here went through such processes.

As an answer to changing society, ITESM renewed and reprogrammed courses in agronomy and agricultural engineering to offer programmes adapted to the 'new reality'. In addition to an undergraduate programme of *Agricultural Engineering in Production* (AEP), the students have many choices including new bachelor of science programmes such as *Food Industry Engineering* or *Agribusiness and International Trade*. Likewise, Agriculture Engineering now offers many options such as *Mechanical-Electrical Engineering* and the *Mechanical Business* programmes.

The new 2005 mission of the ITESM system, as defined in 1995, promotes important processes oriented to change the academic and extra-academic training of graduated students. The main change was to move from a mission-oriented formation to form professionals and graduates, with levels of excellence in their area of expertise, to a mission oriented one to form persons with a strong commitment for the development of their community. The graduated students are expected to make an impact upon the social, economic and political sectors and to be competitive in their area of expertise at the international level.

In order to achieve this mission, the teaching/learning process and the extra-academic activities for the students must develop certain abilities, values and attitudes to foster this sense of commitment towards the community.

The students' abilities that needed to be reinforced include the capacity to (i) learn by themselves, (ii) the capacity of analysis, synthesis and evaluation, critical thinking and creativity, (iii) the capacity to identify and solve problems, (iv) the capacity to work in groups, (v) the efficient use of information technology, (vi) proficiency in English language and effective oral and written communication. The values and attitudes that the institution promotes include honesty, responsibility, leadership, entrepreneurship, innovation, and a spirit of constant improvement, among others.

ITESM defined a certain number of ‘seal’ courses that were incorporated in every academic programme. Areas covered include: analysis of information; English language; the culture of quality advanced redaction; leadership; ecology and sustainable development; oral communication; entrepreneur development; social-cultural values of the world; social-cultural values of Mexico and Latin America and values for professionals. These courses were meant to provide transversal competencies. Eventually, they were further developed into five programmes complementing the training of the learners: the *Entrepreneurship Programme*, *Leadership Programme*, *Quality Culture Programme*, *Export Programme* and *Support to the Community Programme*.

For ITESM, the main competitive advantage of the programme is that, while ensuring a high level of technical qualification, it also provides the managerial abilities required to successfully face the challenges and opportunities that a new economic environment is creating in the food industry. A full evaluation of the re-engineering that affected the programmes will be completed in 2005.

The focus of the teaching at *Bunda College* also changed overtime to follow the trends felt in agriculture and on the labour market. From the establishment of *Bunda* until the early 1980s, the programmes were geared towards supporting the smallholder agriculture sector.

During the following ten years, as the college had satisfied the government’s interests in filling the needed shortfall, not many innovations took place. It was realized that for future development the college needed a thorough and well-articulated operational plan. In addition, it was also felt that the traditional agricultural labour markets targeted by the programmes had been saturated. *Bunda College* needed to produce graduates with new skills. This suggested that the college would be obliged to change its focus to more diversified programmes in order to foster ‘multi-skilling’ and so facilitate graduates’ transition to employment.

A second step in the redefinition of the programme areas took place in the late 1990s and a process of consultation was launched to reconsider the college offerings. Eventually, in order to respond to pressing sustainable development issues, the college, in 2001, established a second faculty, the *Faculty of Environmental Sciences*.

At *Zamorano*, the formal curriculum used to be almost entirely focused on technical production activities. Electives were uncommon. By 1986, several new departments had been created, including agricultural economics and agribusiness, plant protection, natural resources and conservation biology and rural development. Elective courses for third and fourth year students proliferated.

In June 1998, the Board and Administrators of *Zamorano* launched the '4 by 4 Programme'. This is a four-year programme intended to replace the three-year plus one-year, optional programme. Within this new framework, four areas, each oriented to a niche in the labour market replaced the former eight departments oriented to an academic specialization.

In late 1998 and throughout 1999, faculty members worked under the guidance of the Dean to carefully define a graduate profile based on societies' needs and then to create a curriculum that would respond to the profile. The implementation of the '4 by 4 Programme' occurred on a year-by-year basis from 1999 through 2002. The new curriculum significantly reduced the total number of credits offered by *Zamorano*, eliminated most courses with a recipe-based content and combined courses considered as over-specialized at the undergraduate level.

At the *University of Cordoba*, the main transformation in academic organization and in curricula resulted from **the establishment of a programme on rural development, unique in Spain**. The search for an integrated approach prompted the creation of interdepartmental work and the adoption of a multidisciplinary approach. Considering the diversity of subjects relating to the rural environment, it was deemed appropriate that a wide range of fields of studies – including agronomy, biological science, veterinary science, economic science and sociology – should be open to students' choice.

The guiding principles of the programme, i.e. a multidisciplinary approach, commitment to quality and flexibility – have allowed overcoming some of the operational difficulties encountered.

The multidisciplinary approach enlightens both the definition of contents and the creation of interdepartmental staff groups and student work teams. The complexity of rural systems means that different

approaches to the same problem are required, thus enabling economic, social, territorial and cultural analysis. By adopting the broadest approach students should be able to acquire extensive knowledge which they can use when dealing with specific problems in particular areas.

Among the studied institutions, the National Agricultural University of the Ukraine probably illustrates the deepest and fastest change in curricula and academic organization. During the Soviet Union era about 15 per cent of the programme was dedicated to ideological subjects. The 'transition process' resulted in refocusing the content of education, including a shift from a socialist ideology to a capitalist market-oriented approach. This reform also involved a shift in the orientation of HAE programmes. While in the past, most attention was given to agricultural production needs, today teaching relates more broadly to rural development and food systems.

The main direction of the transformation of NAUU training system was to focus on training specialists for serving agricultural producers and rural communities, specialists qualified in information and consultation work with agriculture producers and rural communities, including new marketing methods. Several changes in curricula were introduced to that effect. An *Agribusiness Institute* and a *Department of Agroconsulting* were established. The department, using the experience of universities in the Germany, Ireland, Russia and the USA develops and provides training courses for disciplines such as *Principles of agroconsulting and Managerial agroconsulting* and *Organization of information and consulting activity into students' study programmes*.

The creation of this department was part of a broader restructuring of the university. Hence, as from 1990, the National Agricultural University of the Ukraine (NAUU) reformed its traditional faculties – agronomy, agricultural chemistry and soil science, plant protection, animal science, veterinary medicine, mechanization of agriculture, electrification and automation of agriculture, forestry, economics, pedagogy – and established new ones: management in agriculture, land management, quality and safety of agricultural products, agricultural machines design, horticulture and landscape architecture, law.

In China the reform of HAE involved various measures to improve quality and relevance of delivery. Main changes include:

- Introducing flexibility through optional courses, representing 25 per cent to 30 per cent of total requested credits. After the students fulfil the compulsory courses, they can select relevant courses from other colleges or faculties to suit their own interests;
- Merging the relevant courses into block modules or seminars.

Another significant innovation was the recognition of rural development as a field of study. In 1998, following close consultation with the *Ministry of Agriculture* (MOA) and the *Ministry of Education* (MOE), the *China Agricultural University* (CAU) established a College of Rural Development. The new curriculum for rural development was officially included in the national university faculty directory with the name of ‘regional rural development’.

Figure 2. Number of specialities and of government-sponsored students at the National Agricultural University of the Ukraine (NAUU)

Veterinary medicine (vets and expertise)								
Veterinary medicine (lab management)								
Veterinary medicine (veterinary sanitary and hygiene)								
Marketing								
Agricultural law								
Crops selection and genetics								
Technology for woodworking								
Horticulture								
Automation in technological processes and productions								
Water bio-resources and aquaculture								
Management of foreign economic activity								
Machinery and equipment for agricultural production						50	50	50
Forestry melioration						25	25	25
Olericulture and pomiculture						50	50	50
Management of enterprises					28	125	125	125
Finances					81	50	50	50
Ecology and environmental protection					25	25	25	25
Land management and cadastre register			64	55	60	50	50	50
Forestry	115	185	90	101	99	75	75	75
Economical cybernetics	41	30	32	40	25	25	25	25
Accounting and audit	91	88	124	152	134	100	100	100
Economics for enterprises	90	127	119	110	124	50	50	75
Energy in agriculture production	178	161	149	140	149	150	150	150
Mechanical engineering for agriculture	224	202	209	204	208	200	200	200
Veterinary medicine (clinic)	169	181	194	193	211	225	225	225
Animal science	115	108	120	126	126	125	125	125
Plant protection	56	57	65	89	108	100	100	100
Agrochemistry and soil science	56	103	82	83	53	50	50	50
Agronomy	104	127	84	104	124	100	100	100
Year	1990	1991	1992	1993	1994	1995	1996	1997

Source: NAUU.

- Learning process

The development of work-experience programmes constitutes a major evolution in delivery systems. This trend is present in all the cases studied, illustrating a move towards the increasing vocationalization of HAE programmes, as well as a growing concern for the employability of graduates. Another significant innovation is the importance given to learning-to-learn. This increasing attention for developing such a capacity among graduates reflects the growing importance of lifelong learning to ensure that people stay up to date with fast changing market trends and technological change. Finally, HAE institutions are also increasingly relying on *information and communication technologies* (ICTs) to diversify on-campus modes of learning as well as to expand delivery to reach off-campus learners.

An important dimension of the reform of agricultural studies at ITESM was the ‘industry residency’. This scheme involved an internship in a particular enterprise in order to strengthen the students’ technical and personal experiences. Students usually spend a summer or a full-term outside ITESM – within Mexico or abroad, mainly in the USA. The student gains experience as a result of participation in the production process of farms, packing houses, food processing industries and marketing firms. As a whole, then, the internship promotes the development of various specific applied and practical skills much needed in the labour market.

The *Zamorano* experience equally demonstrates a significant commitment to changing teaching methodologies and modernizing expectations regarding learning outcomes. In 1998, together with the creation of careers instead of departments, the so-called *Zamo Enterprises* replaced traditional modules, changing fundamentally the basic concept of learning-by-doing.

Originally learning-by-doing consisted almost entirely of production-oriented activities carried out by students and directly supervised by the same professors who taught theoretical courses. There was, therefore, a high level of co-ordination between learning-by-doing and the content of technical courses.

With the new concept, specialized, non-academic staff members are in charge of learning-by-doing activities, the professors providing support,

as necessary. *Zamo Enterprise* based learning-by-doing activities were designed to simulate real-world production. Learning-by-doing is structured in a systematic manner with specific learning objectives. In this context, first and second year students are considered apprentices, carrying out productive work and basic administrative tasks. In the third year, students in different career paths return to the *Zamo Enterprises* to carry out more independent projects, they also begin their thesis at that time. By the fourth year, students who return to the *Zamo Enterprises* are acting as innovators and assistants to the administrators. In 2002, for the first time, *Zamorano* sent approximately 25 per cent of its fourth year students off-campus during the first trimester to participate in in-service training.

In China, the reform process involves the strengthening of the practice components. Due to the employment market challenge, employers place a premium on the practical experiences of graduates. The percentage of practice and experiment was increased by 20 per cent. There is a minimum quota for practice and experiment for each faculty. Institutions like the *China Agricultural University* are also involving students in community surveys in an effort to give them a deeper understanding of farmers' livelihood systems and production conditions.

Besides the development of work-experience programmes, another key reform concerned teaching practices. The re-engineering of the pedagogy undertaken at the ITESM seeks to increase the students' abilities to learn by themselves using efficiently the information and electronic technologies. This new educational process leverages the ability of 'learn-to-learn'.

The use of techniques such as *collaborative learning*, *problem-based learning* and *project-oriented learning* represents new learning alternatives for students. They are exposed to a learning environment that facilitates the development of abilities such as analysis, synthesis and evaluation of information and the development of critical thinking. The identification and solving of a particular problem and the ability to work in collaborative and multidisciplinary groups are other advantages of the new teaching/learning process.

In *Zamorano* too, group learning, active learning and student-centred learning all became common phrases that were reflected increasingly in teachers' experiments and practice.

Those examples show that HAE institutions are increasingly conscious of their role in facilitating lifelong learning in rural areas. Similarly, they can play a great role in providing *information technology* (IT) skills and promoting access to IT facilities. In so doing HAE institutions have the potential to contribute to reduce the digital divide between rural and urban areas.

The *Instituto Tecnológico y de Estudios Superiores de Monterrey* (ITESM) made significant investments to build technology infrastructure (desktop computers, laptops, distance education classrooms, software, servers, wireless networks) and prepare both teachers and students to use it. This programme included the acquisition of laptops for every single institution's instructor. Moreover, students now require the use of computer laptops as the 'basic' personal tool for learning.

At the *University of Cordoba*, the development of new technologies and the access to theoretical knowledge, in real time through Internet, changes the learning process by stressing the search for and the interpretation of, information. Furthermore, in view of addressing the heterogeneity of training demands and their wide spatial distribution, the university decided to develop multimedia training programmes. The use of state-of-the-art multimedia computer tools enables interactive teaching, adapted to the personal needs of remote students. Theoretical subjects can then be studied at distance, in an individualized manner. Specific teaching materials are available for each subject and students can count on the continuous assistance of a tutor through telephone or e-mail.

Information technology can also serve the development of links between institutions across countries. Within this prospect, the *University of Cordoba* is undertaking the design of a distance learning masters degree for least developed countries (LDCs). The *Rural Development Research Group* is deeply involved in the design of this project.

2.2.2 Working with and for the rural community

The ultimate success in improving the quality and relevance of HAE institutions depends to a large extent on the support of stakeholders.

As mentioned earlier, ITESM aims at producing graduates committed to the development of their community to improve it socially, economically

and politically. To achieve this, the institution involves industry advisors in the definition of its strategy. The 2005 mission defines their profile and the type of support that is expected from them:

- They should be born leaders who, with a disinterested spirit and collaboration, share with the Institute the commitment to promote, through education, the development of the country.
- The advisors are people who share the values and the education philosophy on which the ITESM system and all its campuses base its academic activity.
- The stakeholders are expected to participate in the planning of the ITESM System and the campus that they support. In conjunction with the academic community, they define the strategies that the Institute and its campuses must follow.
- The advisors should be promoters of the presence and good image of ITESM in their community and the country.
- Advisors should represent the aspirations that their region has in educational matters.
- Stakeholders should be enthusiastic collaborators in the financial campaigns with which the Institute seeks support for its operation in order to be in first position in the scope of education.

Within this framework, the *School of Agriculture* has strengthened links with the farm sector and related governmental agencies, as well as with agribusiness and enterprises in the whole agrifood chain. At the present time with the Agribusiness Centre, the Applied Agriculture Centre, the Biotechnology Centre and the Centre for Food and Agriculture Research, the school has increased the contribution to the productive sector and has expanded its partnership arrangements with many entities both public and private.

Most of the projects are aimed to develop an international competitive level of the agrifood sector. Research and extension as well as consulting services are conducted in this spirit. In order to reach a significant and solid presence, the *School of Agriculture* has established contracts with organizations and individuals, the nature of the relationship being a client-supplier for specific products and services. The extension or consulting service is charged to the client who pays accordingly to a contract previously established.

In order to facilitate and sustain partnership arrangements some institutions organize, on a regular basis, communication events on campus to interact with the community. Such initiatives are also useful to attract future students, establish contacts for finding opportunities for work-experience programmes or for placement of graduates. They can also help to raise funds from donors.

In 2001, *Bunda College* introduced the *Bunda awareness week*. Through this initiative, a week is set aside where farmers, parents/guardians, employers/partners, donors and the alumni are invited to the college and introduced to the new technologies and made aware of the life of the college. Also in 2001, the Bunda College Alumni Association was formed. The objective of this association is for the college to keep in touch with the alumni who can in turn market its programmes and also give feedback on the college's programmes for better quality education.

A comparable initiative can be found at the *University of Cordoba*, where, every two years, to coincide with graduation, a Congress, '*International Encounters of Rural Development*', takes place. This event gathers different types of rural professionals (technical and administrative personnel from *Rural Development Groups*, politicians with responsibilities and competence in the field, academics, other professionals of the sector, etc.) from Spain and other countries. The initial objective of the Congress is to show students how to make contact with the reality of the sector and the most recent problems affecting it and at the same time facilitate the establishment of links with possible employers. However, this initial aim has been considerably extended and the Congress is currently being shaped as a '*Forum for reflection and discussion of great interest for the sector*'.

At *Zamorano*, outreach programmes are part of, but also facilitate reform. They express the fact that the institution could no longer perceive itself to be an isolated, even hermetic, institution separated from broader society. Outreach programmes may have been the single most important internal drivers for motivating change at *Zamorano*.

Outreach consists of all those activities that are carried on for the off-campus clientele. It includes continuing education, extension, technical assistance, consultancies and applied research. In the past, students were never involved in these activities and until 1979, faculty members were explicitly prohibited from engaging in any outreach programmes.

Today, outreach activities, whether directed at small-scale producers, large businesses, communities, non-governmental organizations (NGOs) or governmental organizations, involve students and faculty members as part of the learning-by-doing activities.

Outreach attracts those faculty members and presumably administrators, who are 'open to change'. In *Zamorano's* case, those professors who were most unwilling to embrace institutional change were the same ones who were unwilling to become involved in outreach activities. No other factor – not even age, academic discipline or degree-held – was more correlated with the resistance to change than was the unwillingness to become involved in outreach activities.

In *the Ukraine*, the first step of the agrarian reform involved the privatization of land and property of former collective farms. The country had to face a number of problems concerning the development of rural areas and living capacities of the rural population for whom the work on land is not just employment but also a way of life. About 45 thousand rural settlements replaced a single monopoly agricultural enterprise that previously used to deal with the majority of social, economic, ecological and other problems.

This transition required another form of organization for rural communities. The centre of rural development administration was brought to the rural communities' councils financed by local budgets. It also required another type of organization and support for agricultural production. The need was then felt to create a system able to disseminate the agricultural knowledge and information – such as extension services – based on the co-operation between research centres, educational institutions, consulting enterprises and the bodies of the state and public administration of agriculture.

By a 2000 Parliamentary decree, the *National Agricultural University of Ukraine* (NAUU) was designated as the leading HAE institution in Ukraine to take part in forming and providing an appropriate extension system. Several conferences, involving international partners were organized in order to make use of world experience in this field.

A particular emphasis was placed on the interaction between research and education. At NAUU research and education were integrated and the establishment of an agricultural consulting centre helped to strengthen

the connections between the faculties and the private agricultural sector. In addition, there are 25 regional centres of the scientific support for agricultural enterprises and farmers.

Extension services are the most frequent form of contribution of HAE institutions to economic development. Yet, increasingly they look beyond this traditional service to be more proactive in building the local economy, for instance, through entrepreneurship programmes or rural development initiatives. HAE institutions often consider it imperative to serve as agents of change. They have an enlarged mission and some of them enjoy the stature and flexibility to provide leadership for local development. *The University of Cordoba* offers an interesting illustration of this dimension.

Within the European Community, Andalucia is categorized as an 'Objective 1 Region', meaning that it is an undeveloped area. This situation has led to the setting up of a number of strategies for rural development. Indeed, there are 50 Rural Development Groups in the region, which carry out their activity with a population of not less than three million inhabitants. As a result, there is a demand for graduates who have been specifically trained in rural development issues.

Within the university, a group was established on a voluntary basis to reflect on this need, in an effort to find solutions to the rural problems of the region. A decision was made to design a series of formative activities in rural development, among which stood out a multidisciplinary programme of higher education, open to graduates or students from a wide range of degrees so as to overcome the isolated vision offered by traditional qualifications.

Traditionally, HAE institutions have trained students for employment, often in the public sector, not for self-employment. Yet, small business development seems a logical strategy for poor rural communities that are unlikely to attract external productive investment. Fostering new entrepreneurs therefore requires that the HAE institutions refocus their programmes. It is however important to differentiate self-employment and entrepreneurship and to recognize the complexity of the task.

Low-developed economies depend on self and family employment but display a poor record in entrepreneurship. In OECD countries, where waged employment is the reference, experience and business failure rates

show that relatively few manage to be successful entrepreneurs. It is in this context that current attempts by HAE institutions to foster rural entrepreneurs must be appreciated.

In the 1980s ITESM decided to add extra abilities, values and particular characteristics to its graduated students. The intention was to develop graduates into actors of change through entrepreneurship programmes. Special training was designed to foster among students an entrepreneurial vision. The main tools used in this programme are the incubation, development and implementation of an enterprise. A formal structure for the entrepreneurship programme was developed in 1985 and implemented within the various fields of study, including the undergraduate programmes of the *School of Agriculture*.

In the *School of Agriculture*, the application of the entrepreneurship programme has resulted in the development of research congresses oriented to optimization of products and processes for the food industries. The results reported in these congresses are available for students interested in setting up their own business. Furthermore, the agricultural experimental camp has been used to evaluate productive systems and validate technologies that can be implemented in either new or established enterprises to produce economic benefit.

Up to 2002, the entrepreneurship programme contributed to the implementation of more than 23,500 projects. As a result more than 3,000 enterprises were created. Although detailed impact evaluation is still needed, available information indicates that these enterprises contributed to job creation and to projecting a modern and dynamic image of the economy.

2.2.3 Globalization strategies

People in rural areas are as much affected by globalization as urban dwellers. Yet, they have fewer opportunities to benefit from it through establishing productive links with the rest of the world. Increasingly, HAE institutions, through their co-operation programmes, are developing such linkages.

The internationalization of students is part of the development strategy of ITESM. Therefore, the *School of Agriculture* allows its students to spend between one and two terms (maximum one year) abroad, mainly in universities of Canada, Europe and the USA. For such purposes an

international exchange programme was created in the early 1990s. Furthermore, in order to gain international experience students can choose an internship in an international enterprise. As a result students can also explore job markets outside Mexico.

The internationalization strategy has also an impact upon staff training. Lectures and courses given by visiting professor are common. Recently, it was decided that at least two courses of the whole curricula must be taught in English. Thus, proficiency in the English language for students and staff is mandatory.

At the *University of Cordoba*, the international strategy offers the opportunity to exchange experiences with other countries at various levels: involvement of lecturers from European universities and institutions in the degree programme, opportunities for students to further their studies at other European and South American universities or to pursue Intensive Study Programmes or European Modules in conjunction with other European Universities under the *Socrates-Erasmus European Community Programmes*.

The *Cordoba University Programme* in rural development is followed by students from other European universities. At present the demand is growing from Latin American students. In turn the number of Spanish students completing their training in other European universities has also increased.

In 2001, the international character of the studies was further strengthened by significantly increasing teacher and student exchanges as well as international programmes. The affiliation of the *Rural Development Research Group* to various international university networks, together with the traditional willingness of the university to exchange teachers and students with other universities within Spain and elsewhere, is creating a very favourable atmosphere for the insertion, in international circles, of the studies and the students alike. The participation of the *Rural Development Research Group* in different initiatives of the *Chair of Co-operation for Development* is strengthening the relationships with universities from the South (mainly Latin America and North Africa) and from Eastern Europe, as well as with international organizations, co-operation agencies and NGOs. This global network exposes students and professors to other realities, *and eventually this process produces a beneficial effect on the quality of teaching and learning.*

During the Soviet Union era, NAUU's international activity was focused only on foreign students training in veterinary medicine, agronomy, plant protection, agrochemistry as well as other programmes. Over 3,000 international students from up to 100 countries in the world received higher education at NAUU, 400 of them obtained a Ph.D. and more than 100 were conferred a professor's title. Besides, the university maintained close co-operation with East European agricultural universities (Bulgaria, Czech Republic, Hungary, Poland, etc.) through faculty and student exchanges.

When the Ukraine became an independent state in August 1991, the National Agricultural University of Ukraine (NAUU) started actively to develop collaboration with agricultural universities in Western Europe, USA and other countries within the framework of inter-governmental and partnership agreements and joint projects. Linkages were focused on reforms in HAE and on the search for international educational standards.

This policy resulted in the creation of an International Centre for MBA programmes. The main objectives of these programmes are to enhance students' knowledge in international agribusiness by giving a clear understanding of the principles and experience in management. The aim is also to foster the recognition of the NAUU diplomas at the international level.

Thus, in 1998 NAUU organized and held an international conference entitled '*Globalization of higher agricultural education and science: meeting the needs of the twenty-first century*' in conjunction with two other universities: *Iowa State University* (USA) and *Humboldt University* of Berlin. One of the important results of the conference was the launching of the *Global Consortium of Higher Education and Research for Agriculture* (GCHERA). Following its creation and up until 2002, GCHERA has held two world-wide conferences: one in 1999, in Amsterdam, devoted to *Leadership for higher education in agriculture* (Acker, 1999), one in San Francisco focused on *Higher education and research for agriculture and food systems in the twenty-first century* (2001). In 2003, the Consortium Conference will take place in Kiev, Ukraine.

2.3 Conducting the reform: planning, governance, staff and financing issues

2.3.1 Strategic planning

Placed in a challenging context, HAE institutions use strategic planning methods to analyze economic opportunities and educational needs in the region, articulate vision and set development goals.

As from 1985 ITESM initiated a strategic planning process, which outlined the definition of the concepts for its activities, as well as organizational structures and a vision of the future. This process involved wide consultation with various research associations, located in different cities throughout the country, and the university president, vice-presidents, administrators, professors, alumni and students.

In order to achieve these educational goals, the ITESM has improved its academic indicators systems. These indicators support the constant improvement of the teaching/learning process. In general terms, the indicators evaluate aspects related to the performance of the staff, academic programmes and course content within the teaching/learning process. The students evaluate several aspects, including:

- evaluation of the subject for the course
- respect towards students by the teacher
- promotion of the self-learning process
- promotion of participation and research
- promotion of the appropriate use of the technology
- facilitate the learning of the subjects
- facilitate the development of abilities, values and attitudes
- assessment scheme.

The evaluation of these aspects is carried out each academic term using the electronic facilities of the school. The progress of the learning/teaching process is monitored using this evaluation mechanism.

In 1999, *Bunda College* also planned its development for the 2000-2004 period within the framework of an operational plan. The Five-year Strategic Plan, formulated with the support of Norwegian co-operation, was also conceived as a fund-raising document to mobilize resources

necessary for adjusting the programmes in line with the new requirements of rural labour markets. The main challenges to be addressed by the plan include:

- the development of programmes that would meet both government and private sector needs;
- the design of communication campaigns to inform funding agencies about the college's potential and the constraints affecting its effectiveness;
- the provision of high quality research, consultancies, outreach and information services for increased national and sub-regional demands;
- the improvement in transparency, accountability and the development of income-generating activities, in a context of declining budgetary resources from government, which called for finding ways of generating income;
- the search for more autonomy.

The preparation of the plan involved a series of workshops with key stakeholders. From this plan the Norwegian Development Co-operation Agency (NORAD) itself, sponsored the refurbishment of college buildings, installation of the *Internet* and the purchase of more computers for both staff and students.

Zamorano developed its first public strategic plan in 1993. Contrary to the previous ones, this plan was made publicly available. However, it was developed hurriedly with limited internal participation and no systematic involvement of external stakeholders. *This five-year plan was replaced in June of 1998 by a strategic plan conceived as an insightful and comprehensive conceptual blueprint for institutional excellence and responsiveness.*

Furthermore, the development of a rolling four-year business plan mandated by the board constituted the main tool to create a bridge between the strategic plan and the annual work plans and budget. This business plan is the principal mechanism that the board and administration have for sharing ideas and co-ordinating opinions and activities. It allows monitoring by the board of institutional progress without demanding or allowing excessive micro-management or interference with top administration's authority. For the first time, the institution began to link a long-term, qualitative institutional strategy derived in consultation with

internal and external stakeholders with a specific short-term development plan.

Besides the planning process, outside consultation plays an important role in reflecting on current activities and considering new options. Discussions with graduates, employers and workers allow better understanding of what the students have learned, as well as the values, behaviours and attitudes that they have adopted, and used after graduation. This is an important monitoring procedure that helps to make the necessary adjustments.

However, the institution is cautious not to accept literally the messages from stakeholders sometimes particularly preoccupied with short-term issues. This is especially important when working with employers. For instance, *Zamorano* was sometimes advised to create university level programmes focused only on coffee, cotton or on dairy cattle as majors subjects. Clearly such a narrow vocational focus would have been a major step backwards.

At the *University of Cordoba*, the first step of the planning process consisted of carrying out a survey of companies and public and private institutions involved in the rural community which could be potential employers of graduates in rural development. This research, aimed at determining the nature and characteristics of the demand for graduates in rural development, was designed to define the needs of different agents at local, provincial, regional, national and European levels. This survey had two objectives: firstly, to contrast the opinions of the promoting group on the need for graduates specialized in rural development and secondly to define the most suitable graduate profile and the course content.

Following the survey, a first training experience in this field consisted of a course for re-skilling professionals from various countries working in the agricultural sector. The *Andalusian Regional Government* contributed the necessary resources in order to carry out this pilot scheme in 1994. The *Expert rural development course* was attended by students from six different countries and granted 30 credits within the *European Credit Transfer System*.

The satisfactory results produced by this pilot scheme, completed by a series of short summer courses, confirmed the existence of a social need

and a specific demand for higher education on rural development, which no Spanish university could fill.

In China, the reform of HAE took place within a carefully designed planning approach involving the following steps:

- identification and diagnosis of the internal and external problems and constraints encountered during the national economic reform. This process was already begun by the end of the 1980s and mainly initiated by HAE institutions internally and by the Ministry of Agriculture;
- formulation of the strategy, concept and guidelines of the HAE institutions' reform according to the identified problems and constraints and integration into the national institutional reform. This has been done jointly by the ministries of education and agriculture in 1993;
- launching in some universities of the pilot reform regarding internal structures and merging. Following this testing, the reform concept was further developed and an action plan for the large-scale HAE institutions reform was drafted over the 1993-1995 period;
- implementation of the HAE institutions' reform in the whole country through multi-institutional co-operation and co-ordination. Implementation took place as from 1996. This process was guided by the ministries of agriculture and education in co-operation with the provincial government.

In 2002, the reform process of some HAE institutions is still going on. In the six countries under study, all of the 69 HAE institutions, including national agricultural universities, provincial agricultural universities and colleges, have been involved in the reform.

2.3.2 Administrative structure and governance

Implementing diversified missions and activities requires appropriate administrative structures and governance mechanisms. The cases studied confirm that this dimension constitutes an important component of the reform process.

Various aspects are at stake. One relates to decision-making processes and the nature and intensity of responsibility shared within the institution

as well as with its constituency. Another aspect concerns the structure of the institution, taking into account its mandate as well as external expectations and constraints. Finally the sharing of authority between the various levels of management represents a key variable to understanding institutional change. The case studies illustrate all these aspects. While some examples relate directly to a particular issue, more complex processes affect administrative structure and governance through multiple ways like the reform in China.

The transformation of the management style at Zamorano took place within a broader transformation of the political landscape. In all countries in the region by the early 1990s, democratic governments had replaced military dictatorships, civil society organizations were increasingly important and human rights had become a major issue. Clearly the relatively authoritarian *Zamorano* model, established in less democratic times, needed to adapt to these new political and social realities. The *Board of Trustees* formed a key protagonist of institutional change. During the period 1997-2002, the Board provided important support for the conceptualization and implementation of the reform. Throughout the 1990s continuous efforts were made to devolve authority and responsibility to the programmes. However, strong internal resistance limited the impact of this decentralization policy.

At *Bunda College* the issue of autonomy has been discussed several times by the university authorities and the government. In 1999, the University of Malawi engaged a consultancy team to provide recommendations on how the governance pattern could be reformed. Among other items, the team recommended to:

- improve the efficiency and relevance of the university's products and services through decentralization and functional re-engineering and get rid of the non-core functions such as overseeing maintenance, security and catering;
- equip college leadership with executive authority to ensure a smooth transfer of functions from the University office to colleges.

The discussion of increased autonomy for Bunda College is still on-going. However, it already enjoys more authority, being able to:

- receive tuition fees;

- advertise for recruitment of postgraduate students;
- recommend to the university office the recruitment of staff above lecturer level;
- receive revenue generated by the college;
- receive subvention directly from treasury with effect from July 2002.

Unfortunately, there are still other activities where the college does not have such autonomy and these include:

- conferment of degrees and certificates;
- approval of curricula;
- approval of annual budget;
- advertisement for recruitment of undergraduate students;
- conditions of service of staff.

The reforms conducted at ITESM implied a new restructured organization. At the School of Agriculture level, it implied the fusion of several departments and the incorporation of the school into a new upgraded administrative entity named the *Division of Engineering and Architecture*. This restructuring illustrates perfectly the refocusing of the institution.

In China, changing the internal administrative structure of HAE institutions constitutes an important element of the reform. Integration of the relevant functions of university departments or divisions has increased efficiency. Consequently, the number of administrative staff was reduced by 30-40 per cent. The redundant administrative staff was transferred to the logistic services and to student management departments.

To further address the issue of efficiency, existing HAE institutions were merged with provincial universities. A large scale-merging plan was initiated in 1998, following a pilot phase. Four types of mergers were implemented:

- (i) 'Strong-weak merging': Strong HAE institutions merged with the weak ones;
- (ii) 'Strong-strong merging': Several strong HAE institutions formed a new, stronger and larger institution with more faculties covering all professional areas needed by the labour market;
- (iii) 'Weak-weak merging': Integrating weak HAE institutions together for strengthening the capacities and more effective utilization of relevant resources;

- (iv) Merging education institutions with research institutions: before the reform the co-operation between HAE institutions and research institutions was very weak; sometimes they competed for research fund allocation. Merging the HAE institutions and research institutions provides more practice places for students and research institutions are able to use HAE institutions facilities for conducting their research activities.

The results and impacts of different types of merging are quite different. For 'strong-strong merging', efficiency and effectiveness have significantly improved. For 'strong-weak merging', in some cases former strong bodies discriminated against the weaker ones in terms of funds allocation and internal resource distribution. The *Xinjiang Shihezi University* provides a good illustration of a successful 'weak-weak integration'. It was established in 1996 by merging several weak institutions: *Xinjiang Shihezi Agricultural College* merged with *Shihezi Medical College*, *Shihezi Economic College* and *Shihezi Normal College*. Through the merging, the enrolment capacities, as well as the teaching and research forces were increased. The reputation of these newly established universities has significantly improved.

In cases where institutions had a well-established social status and educational reputation the merging sometimes produced a negative impact on quality of intake. Excellent candidates tended to prefer to be enrolled in famous faculties and departments.

When education and research institutions located in the same compounds were merged (example of *Shaaxi Yangling Agricultural and Forestry Technology University*), it was sometimes difficult to co-ordinate the education and research funds allocation.

For all types of merging, the overall internal administrative and co-ordination costs have increased. This was sometimes partly due to the fact that merged institutions were located in the different areas. For instance, in the case of the *China Agricultural University*, where the two campuses are located 10 km from each other, the unified co-ordination and administration requires more input.

Those examples illustrate the magnitude of the reform and its impact on institution restructuring. Achieving this required the establishment and steering of a diversified partnership.

Table 5. Stakeholders in the reform of HAE institutions (China)

Stakeholders	Functions and roles in HAE institutions reform
1. Governmental institutions	
Ministry of Agriculture	<ul style="list-style-type: none"> – Formulate the HAEI reform policy and concept – Designing the reform operation plan – Initiate the reform pilot trials in selected universities – Co-ordinate with MOE and the local governments on institutional merging and decentralization of the administrative authorities – Carrying out, co-ordinating, supervising and evaluating the HAE institutions reform process
Ministry of Education	<ul style="list-style-type: none"> – Design and formulate overall national HE reform policy and guidelines – Consultation with MOA and other line agencies for piloting and implementing the HAE reform, especially for HAE institutions merging and changing the administrative links to MOE and Department of Education (DOE) at provincial level – Formulate the curriculum, catalogues and teaching methodology reform policy and concept and guiding the reform process – Formulate, test and implement the reform concept for student admission and employment instruction – Information publication on HAE institutions reform and impacts
Provincial Department of Agriculture	<ul style="list-style-type: none"> – Co-ordinating the implementation of the HAE institutions reform at provincial level in co-operation with DOE and Department of Science and Technology for merging the research institutions with universities – Participating in the reform of curriculum, admission and graduation employment reform
Provincial Department of Education	<ul style="list-style-type: none"> – Co-ordinating the merging between HAE institutions and multi-disciplinary universities at provincial level in co-operation with Departments of Agriculture (DOA) – Guiding the curriculum, admission and graduation employment reform – Monitoring and supervision of the reform process and moderating the conflict between different merged institutions
Ministry of Personnel And Ministry of Labour and Social Security	<ul style="list-style-type: none"> – Responsible for formulating the employment policy of universities graduates – Development of qualification standards for employees – Publicizing information on the graduate employment
2. HAE institutions	
Administrators	<ul style="list-style-type: none"> – Implementing the HAE institutions reform, especially restructuring the faculties and departments, personnel and staff recruiting reform – Providing feedback information on the reform process and impacts – Co-ordinating the conflicts between different merged institutions

Faculty and staff	<ul style="list-style-type: none">– Beneficiaries and promoters of the HAE institutions reform at the college and department levels– Implementing the new curriculum and teaching methodology– Providing information and feedback on the HAE institutions impacts and providing proposals for further HAE institutions reform
Students and their parents	<ul style="list-style-type: none">– Providers of market feedback information on the qualification HAE institutions education– Evaluator of impacts of the curriculum and teaching methodology reform– Teaching performance monitors

3. Education Research Institutions

- Involvement in the policy formulation process for HAE institutions reform
 - Providing proposal and professional guidelines on curriculum management
 - Development of the concept and advising HAE institutions for introducing qualification oriented teaching methodology
 - Conducting the research on pedagogic theories on pedagogy for further reform the teaching methodology
-

Source: Processed according to the interview with MOA officials and administrative staff of CAU.

After the reform, most of the administration functions of local HAE institutions were decentralized and transferred to the provincial government or directly to institutions. Decentralized functions include the financial planning and investment budget, personnel development planning and recruitment, planning of enrolment and employment of students. HAE institutions can enlarge and diversify financial sources by mobilizing other sources at the local level, including university-affiliated enterprises, but also from foreign investors. The increased amount of the education fees received from the students has improved the financial situation for HAE institutions with high reputations.

The *Ministry of Education* administers *China Agricultural University*, *Northwestern China University of Agricultural and Forestry Science and Technology*, *Nanjing Agricultural University*, *Huazhong Agricultural University*, *Beijing Forestry University*, *Northeastern China Forestry University*. The former 63 agricultural universities were all merged with multi-disciplinary universities or handed over to the local education department or agricultural department.

As a result, central government reduced its financial and administrative burdens. Before the reform, government was the only stakeholder for operating HAE institutions. Now, the education market is enlarged and open to all stakeholders, even to private investors or enterprises. The diversification of the education market provided a competitive institutional environment. This is an institutional force for existing HAE institutions to further improve their education quality. Under the policy guidance of the local government, HAE institutions can set up their institutional strategy and formulate development plans according to needs of provincial agricultural and rural development. The decentralization also reduced the administrative layers. This change has significantly improved overall education efficiency. After the reform, governmental functions are mainly concentrated at the macro-level, institutional and policy guidance.

In the Ukraine, the Central Government plays an important role in the formulation and adaptation of programmes according to the needs of the economy. The *Ministry of Education* (MOE) is responsible for formulating the national higher education directory and supervising its implementation. The directory is normally updated every five years. During this period, universities can submit proposals and applications to the *Curriculum and Degree Programme Administration of the Ministry of Education* (MOE).

2.4 *Staff issues*

The concept of the learning organization is progressively penetrating the field of HAE. Increasingly it is felt that performance depends on learning. Given the accelerating pace of rural transformation, HAE institutions must absorb new knowledge, including beyond their traditional fields of interest and responsibility. Addressing this challenge requires HAE institutions to develop a staff development culture but also to adapt new forms of staff management, particularly for countries in transition.

In 1992 an official document indicated that “*in order to achieve levels of excellence and high quality, ITESM adopted the philosophy of continuous improvement*”. As a result of this philosophy, each faculty member must be trained in teaching techniques for higher education. Staff are classified in three categories, (i) teaching staff, (ii) staff dedicated to consulting and (iii) staff dedicated to research. This categorization illustrates the diversity of the missions of the institution.

Traditionally, a large part of the activity of the professor was dedicated to research. However, more recently, the proportion of time dedicated to develop and master teaching techniques, particularly with the introduction of information technology to the classroom, balanced out the time spent on teaching and research.

In China, before the reform, teaching and research staff in agricultural universities were employed as civil servants. Once a staff member was recruited the employment period was not limited, this meant, he/she could work up until official retirement age. HAE institutions had no right to terminate the employment relation even if the staff could not provide the expected services to their institutions. With the introduction of the so-called '*dynamic staff recruiting system*' with an average contract period of two years, life-time employment is now over.

Another important area of reform concerns salary. Since 2000, most of the universities reformed the salary and payment mechanism by increasing the salary and income of teaching and research staff. According to the survey conducted for this study, the average income of professional staff after 2000 has increased by 40-50 per cent. In the new system, income will take into account some elements of performance-based salary. If the students' evaluation results and the overall annual work performance have not reached the minimum qualification pre-described for the position, they are transferred to a lower position with lower pay. It is expected that this system will create a pressure on staff members for improving their qualification and work performance according to the job descriptions advertised.

To motivate the college or department directors special position subsidies are now offered. This should encourage deans and directors of colleges and faculties to improve their management and leadership skills.

In order to attract and retain young scientists, some *key national universities*, such as the *China Agricultural University* and *Nanjing Agricultural University*, a special '*Young Scientist Development Promotion Programme*' was implemented. In this programme, young professors and associate professors who have shown excellent research and teaching performance can get special research funds and an additional subsidized premium. Through this promotion programme a group of excellent young scientists have quickly qualified and now play very important roles in key academic positions.

As a result of personnel reform and an increase of the total enrolment since 1997, the ratio between administrative personnel and undergraduate enrolment has increased from 1:16 in 1995 to 1:28 in 2000. The ratio between full-time faculty and undergraduates also increased from 1:4 in 1988 to 1:11 in 2000. These indicators reflect the gain in efficiency achieved through the reform. However the student/faculty ratio is still lower than in European and Northern American universities (20-30), suggesting that further progress can be made.

The administration of universities improved through the personnel structure reform and decentralization of the administrative power to college and department levels. According to estimations of the ministries of agriculture, the total number of important high-level administrative situations was reduced by 30 per cent. Therefore the ratio between teaching and research staff and administrative staff, after the reform, increased by at least 20 per cent. As a result of efficiency gains, the salary of administrative staff has increased by about 40 per cent.

2.4.1. Financing

Finding resources to sustain institutions and implement change, is often difficult in low-income contexts. Frequently external resources fund projects. When such funds run out the institution must find other financial support.

The financing equation varies according to specific national contexts but also according to the status of the institution. For instance ITESM never relied on government money. Since its origins, it has been a private university. Resources come from students' fees but they also combine various other private sources including:

- student fees (approx. 50 per cent);
- financial support from the Board of Trustees (15 per cent);
- incomes from periodic *Sorteos Tec* (Raffles) (20 per cent);
- extension, continuous education and applied research (5 per cent);
- financing campaigns (aimed mostly at private enterprises) (10 per cent).

No subsidies or direct funding support has ever come from any official government agency, at any level, federal, state or local. ITESM

has always been, however, a reliable service provider for many government initiatives such as extension and development programmes, which include training and research.

However, from 1982 to 1984, when enrolments declined, it was imperative to adjust to the lower income from student fees. In 1984, it was therefore decided to increase by 25 per cent the academic load and responsibilities of the professors in an effort to increase productivity. The increase lasted for at least 4 years and gradually it was brought to its original level. This example shows the degree of flexibility of the institutions as well as the stabilization role that the teaching load can play in a context of financial austerity.

On the contrary *Bunda College* depends basically on government subsidies. Initially, the government used to remit funds to the university on an annual basis but due to the government's financial problems, this was changed to a remittance on a monthly basis. Compounding this, was the dwindling government subvention to the university and consequently, to the colleges. When problems occur with the allocation of subsidies students are at a high risk of being sent home. This is the easiest method for reducing spending. Obviously, this puts a lot of strain on the college as far as running its programmes is concerned.

The government realized then that it could no longer cope with the high subsidies it was allocating to the colleges for teaching and students' up-keep. Discussions between the university authorities and the government resulted in the introduction of cost sharing with students in 2000. In that year, the up-keep per student per year was MWK 180,000 (US\$3,273.00).² The agreement was that each student should contribute 26 per cent (i.e., MWK 46,000.00 or an equivalent of US\$836.00) of this cost in the form of a loan, payable in ten years after graduation. This decision was met with great resistance from the students, many of whom come from poor families. Further discussions between the university student body and the university authorities resulted in a compromised fee contribution of 13.9 per cent (i.e., MWK 25,000) of the total amount, the rest to be paid by the government. It must be noted, however, that the '*cost sharing with students*' issue had been proposed as far back as 1998, but for political reasons the government always quashed it.

2. The Malawi Kwacha (MWK) to US dollar exchange rate was MWK 55.00 to US\$1.00.

In such a context, further diversifying of resources has been a key strategy of the college administration. Hence, the College took many initiatives to generate income, such as the short course programmes. In most cases this has been on an *ad hoc* basis and driven by demand.

Communication has been used as a strategy to attract donors. For instance the '*Getting to know Bunda*' approach targeted selected potential donors and policy-makers, who were invited to spend an Open Day at the college to examine the college's research and teaching needs. In addition, more direct contacts with donors and policy-makers were taken through a '*door-to-door*' approach to mobilize funds.

Another way of generating income has been the college farm. *Bunda College* has 1,200 hectares of farmland. In the early days, the administration of the farm was from the central office. Management approaches ranged from management by faculty members in the 1970s to hiring professional farm managers in the late 1970s and early 1980s. All these managers were directly responsible to the College Principal. The central administration took control of the college farm from the early 1980s. The central administration interfered in most of the management issues, especially finance, enterprise selection and farm management. This centralization resulted in, among other things, the declining performance of the farm and consequently, reduced income. In the early 1990s, the college reclaimed the administration of the farm, but by that time the farm was already in so much debt to the extent that it appeared to be owned by creditors. In order to generate income, the college has decided to revitalize the farm as a limited company.

In China, the reform of HAE included various measures to renovate the financing of institutions. Within the new system sources of income include:

- (i) Education funds allocated by the government to HAE institutions according to the number of students, making up about 31 per cent of the total income. The government will subsidize 6,000-7,000 Yuan education fee for each student. This provides an attractive incentive for HAE institutions to increase the intake.
- (ii) Research funds received from governmental institutions and agricultural and agrochemical enterprises make up about 22 per cent

of the total available budget, among which the government allocated research funds representing 90 per cent. Research funds are mainly provided by the *Natural Science Foundation*, *Ministry of Agriculture*, *Ministry of Science and Technology* and *Research Funds for Young Scientists*.

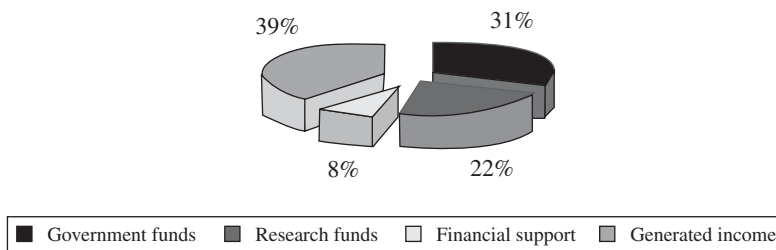
- (iii) Other funds allocated by the central and local governments for infrastructure improvement and financial support for daily operation constitute about 8 per cent, of which 79 per cent are from central government and 21 per cent from local government. Central government funds for HAE institutions' infrastructure improvements are mainly allocated to the national key universities, investment to the provincial and lower level institutions is very limited. The infrastructure of HAE institutions in the Western provinces is still very poor, this being due to the limitation of government funds.
- (iv) Tuition fees from learners, income from the various income-generating education and training activities, such as on-campus short-term training courses, self-financed adult education, distance learning programmes and income transferred by the affiliated enterprises. Altogether these sources make up about 39 per cent of total budget. The student tuition fees vary from 3,500 to 4,500 Yuan per person per year depending on the faculties.

Unifying the student categories was an important measure for funding HAE institutions. Before 1993, there were two types of students, namely government-funded students and self-financed students. In 1993, the Ministry of Education (MOE) conducted enrolment trials in some universities aimed at unifying the two enrolment categories. In the new enrolment scheme, all students must pay the same amount of tuition fee for covering 20-30 per cent of the total education expenses. Before unifying the student categories, self-financed students with lower minimum enrolment scores must pay 100 per cent of the tuition fees. Through the students' enrolment reform, the resource gap, which has mostly depended on the governmental education fund, has been significantly reduced.

The diversification strategy constitutes the most important improvement in HAE institutions' financial situation. An illustration of this pattern is provided by figures concerning the *China Agricultural University* (CAU) for the fiscal year 2001. Compared with 2000, the total

funds of CAU have been increased by 37 per cent. Government support and self-generated income have been the main contributors to this increase.

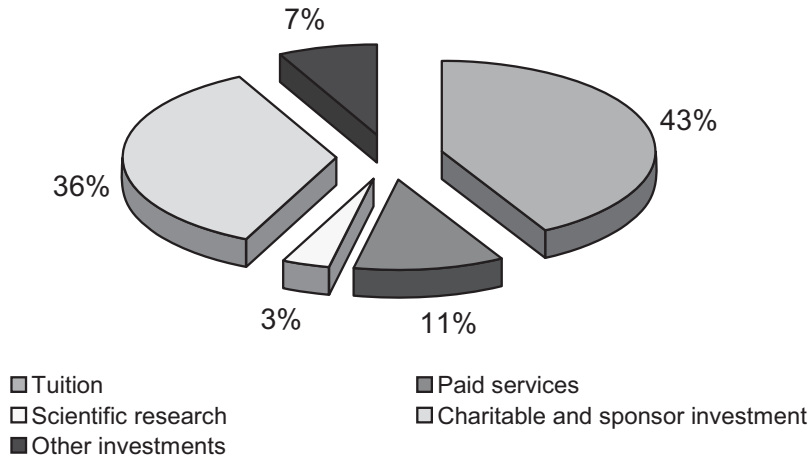
Figure 3. Fund sources of China Agricultural University (CAU) in 2001



In the case of CAU, the income generated by the university-affiliated enterprises is very limited, making up less than 10 per cent in the total annual budget although huge initial investment funds have been invested in the enterprises over the last 20 years. In contrast to CAU, in some HAE institutions, such as the *Agricultural College of Yangzhou University* and *Agricultural College of Zhejiang University*, the contribution of HAE institutions affiliated agroprocessing enterprises or experimental farms makes up more than 20 per cent of annual income. This resource compensated the shortage of government funds. The main problem with affiliated enterprises is that the property right and the ownership as well as the financial interface between the university and the enterprise have not yet been clearly defined and fixed in a contract. Enterprises use the intellectual property right and invested capital of HAE institutions to operate their businesses, but are not committed to allocate the financial returns to the university.

In the Ukraine, in recent years the NAUU has benefited from increasing income from the government. In addition, efforts are made to diversify funding. Self-generated income represents up to 10 per cent of the total budget.

Figure 4. Structure of self-generated income at NAUU



2.5 Resistance and change

2.5.1 Obstacles to the reform process

The experience of the *University of Cordoba* provides a clear illustration of the resistance generated by a shift of focus towards rural development. A number of different sources of resistance can be distinguished. From the agricultural sector itself, the switch from production-orientated farming to a new approach involving the latest trends in *rural development* entails significant changes both in the production system and in the attitudes and activities of all the economic and social agents involved. These changes do not take place overnight; instead, they require sufficient time for a new situation to mature, as well as a catalyst capable of initiating and stimulating the process.

The most negative comments come from those who still fail to understand the need for specific training in rural development. This opinion can be found within the university, mainly among some older teachers who consider that the traditional degree courses cover adequately the needs of this sector. This attitude is relatively common among agriculture engineers and has been considerably influenced by the fact that in the first rural development programmes launched, due to the lack of graduates specializing in the subject, many of the posts were filled by agriculture

engineers who were unemployed or with no previous experience. At the *University of Cordoba*, this attitude was easily overcome since many of those agriculture engineers, in order to alleviate their formative deficiencies, are now attending in-depth courses in rural development.

The second group, which continues to criticize the process, is that of some local politicians who aim to increase their intervention in the network of power and administration which is being created at the local level. For this reason, they prefer sometimes to limit access to training for local technicians, in order to limit their capacity of initiative and their autonomy. Although this narrow-minded viewpoint is unsustainable in the medium- and long-term, it is still present, to a greater or lesser degree and is causing practical difficulties for the full acceptance of the new focus on rural development.

The analysis of the reform process in China provides useful lessons regarding the possible sources of resistance to a system-wide transformation, involving a deep restructuring and wide management change for HAE institutions. According to the interviews conducted with the administrative staff and the review of the articles related to the reform, the following sources of resistance can be identified:

- Merging the institutions reduced the number of administrative positions, both presidents and vice presidents and department directors, which means that about 30-40 per cent of administrative staff who had been working in leading positions had to leave their former positions. This caused resistance to the personnel and administrative reform. Countermeasures to remove resistance are to introduce an open, transparent and competitive staff-recruiting mechanism, both at the university level and department or college level.
- Enlarging the payment and salary differences for motivating the teaching and research staff caused a social disparity between staff with different qualifications. People who had been working in senior positions could lose their position in the new staff employment system. Measures to remove the resistance factor involve having a flexible contract and performance monitoring system that concentrates on the qualification and working efficiency of the professional staff.

- Reducing the senior academic positions meant that some professors would lose their positions and be replaced by more qualified and younger staff. There were some position replacements and exchanges between different staff.
- Resistance from the staff who have been working in the merged institutions formerly with better financial income and better payment represented a sensitive issue. They were worried that the institutional merging would affect their income. One solution to reduce this resistance was to introduce flexibility in income distribution and allow institutions with higher incomes to use a flexible salary scale.
- Resistance against the unified sharing of teaching and research facilities was removed by opening the laboratories to all researchers who were working in different departments and faculties.

Within the institution, resistance to change can sometimes be seen as a problem of generation. At ITESM young professors did not show major attitude troubles to adapt to the new paradigm. They rapidly adopted the model probably motivated by the high information technology involved in the process. Undoubtedly, they perceived the change as a good and advantageous option.

On the contrary, the more ‘traditional’ and older professors often saw the new system as a good but short-term experiment and considered it with dissatisfaction and distrust. Fortunately, they gradually modified their perspective with experience, as now the courses are established. At the present time, older professors are adopting the changes satisfactorily and, in some cases, with enthusiasm.

Lessons from the case studies show that, in spite of the progress made, most institutions find this process of adjustment and reorganization difficult. Change is sometimes slow, always time-consuming and resisted by some.

There is no recipe to overcome obstacles to change but looking at the experience of others can assist in anticipating the sources and nature of resistance and in formulating adequate responses.

2.5.2 Criteria for success

HAE institutions used to define their priorities from inside. Today they need to be responsive to external demands and take on new responsibilities to foster rural development. As a result HAE institutions tend to become more entrepreneurial, more sensitive to the needs of the rural learners, more dedicated to outreach activities and more community focused. Without pretending to be exhaustive, the case studies suggest that innovative HAE institutions include those that:

- expand their mandate beyond agriculture production to embrace rural development issues;
- introduce flexibility in the curricula as well as in the administrative structure;
- establish creative alliances with business;
- contribute to workforce development in their community;
- bring new information about technology and markets to farms and small businesses;
- promote entrepreneurship, the goal being to make entrepreneurship not just a programme but a mode of operation for the institution as a whole;
- develop linkages with the rest of the world to build knowledge;
- adopt governance practices relying on partnership with outside stakeholders and on strategic planning methods;
- use flexible forms of staff management, introducing performance-related incentives and staff development programmes;
- diversify their sources of funding, particularly through increasing income generating outreach activities.

However, the success of such good practices remains dependent on the quality of leadership. Institutional leadership and the competence and commitment of key personnel play a large role in the success of any effort for change.

Institutional flexibility also constitutes an important criterion. Innovative institutions are open to new ideas and ready to build their capacity to take on their new roles.

In addition to internal factors, institutional change can be hampered, or fostered, by the overall legal and policy frameworks in which an

institution operates. The experiences of Bunda College and of China provide a clear illustration of the constraints and opportunities generated by the macro-level policy and legal environment. Some institutions are very autonomous within their systems and can initiate programmes or take initiatives (*China Agricultural University, Instituto Tecnológico y de Estudios Superiores de Monterrey, University of Cordoba, Zamorano*). Others remain more dependent on the ministry apparatus and enjoy less independence (*Bunda, NAUU*). However, whilst the environment is an important variable, it is not a determining factor. The case studies showed that less autonomous but dynamic and creative institutions are able to shape their futures.

Beyond the identification of good practices in institutional transformation, the fundamental debate on the *value of change versus traditions* remains. For *Zamorano*, modernization should involve the reaffirmation of fundamental institutional principles, but not necessarily of traditions. When inducing deep change, it is necessary to build on the existing institutional culture as far as possible. In *Zamorano*, the change process appeared to be the ideal venue for discovering the institution's real principles and reinterpreting them in the changing context. In this case modernization led to a reinforcement of principles. Institutions should seek change in ways that assure that their deepest principles are expressed in manners that are most appropriate to respond to stakeholders' and community's needs and expectations. "*Principles should endure. Traditions may not*" (Andrews, 2002).

References

- Acker, D. (Ed.). 1999. *Leadership for higher education in agriculture*. Proceedings of the inaugural conference of the Global Consortium of Higher Education and Research for Agriculture. Ames, Iowa: Iowa State University.
- Adjepong, S.K. 1999. *The university and national development: an overview of an innovative programme at the University of Cape Coast, Ghana for mid-career agricultural extension staff*. Presentation to World Bank staff at Rural Week.
- Andrews, K. 2002. *The deep change process in Zamorano: 1997-2002*. Case study prepared for FAO.
- Bawden, R. 1998. *Agricultural education and training: future perspectives*. Paper prepared for the Agricultural Knowledge and Information Systems (AKIS) thematic team in the Rural Family of the World Bank.
- Brown II, C. (Ed.). 2000. *Organization and governance in higher education* (Fifth edition). ASHE Reader Series. Boston: Pearson Custom Publishing.
- Conway, G. 1997. *The doubly green revolution: food for all in the 21st century*. London: Penguin Books.
- Economic Development Institute of the World Bank (EDI). 1993. *Improving higher education in developing countries*. Cited in Falvey (1996), *Food environment education*. Washington DC: World Bank.
- World Bank Human Development Network. 1999. *Education sector strategy*. Washington DC: World Bank.
- Eicher, C.K. 1999. *Institutions and the African farmer. Issues in agriculture, 14*. Consultative Group on International Agricultural Research (CGIAR).
- Falvey, L. 1997. *Bright students for agriculture: Do we attract them? Is agricultural education interesting?* Invited paper presented at the Annual Conference of the Australian Institute of Agricultural Science and Technology, Crown Casino, Melbourne. August 1997. Rome: FAO.

- Gasparini, L. 2000. *From agriculture education to education for rural development and food security: all for education and food for all*. Proceedings of the 5th Conference on Higher agricultural education. Seale-Hayne Faculty, University of Plymouth, UK.
- Hansen, G.E. 1990. *Beyond the neoclassical university; agricultural higher education in the developing world, an interpretive essay*. A.I.D. Program Evaluation Report Number 20. Washington DC: Agency for International Development.
- Johnson, E.L.; Bently, O.G. 1992. Strategy options for higher agricultural education. In: Higgs, J. and Mbithi, P. (Eds), *Education for rural families in developing countries*. Urbana, Champaign: INTERPAKS, University of Illinois at Urbana-Champaign.
- Kanyama-Phiri, G.Y. 2002. *The reform of higher agricultural education institutions: the case of Bunda College of Agriculture*. Case study prepared for IIEP, Paris.
- Kasomekera, Z.M. 1999. *mobilizing development for agricultural institutions: experiences from Bunda College of Agriculture, Malawi*. In: Proceedings of the Inaugural Conference of the Global Consortium of Higher Education and Research for Agriculture. Ames, Iowa: Iowa State University.
- Kellogg Commission on the Future of the State and Land Grant Institutions. 2001. *Returning to our roots*: Executive summary of the Reports of the Kellogg Commission on the Future of the State and Land Grant Institutions. Washington, DC: National Association of State Universities and Land Grant Colleges,
- Kunkel, H.O.; Maw, L.; Skaggs, C.L., (Eds). 1996. *Revolutionizing higher education in agriculture, framework for change*. Ames, IA: Iowa State University Press.
- Lee, Y.D. 1997. *The agricultural education system of Korea*. Paper presented at APO meeting on Agricultural Education Systems, Tokyo, Japan.
- Lele, U. 1975. *The design of rural development, lessons from Africa*. Washington DC: International Bank for Reconstruction and Development.

- Liu, Y.; Jingzun, Z. 2002. *The reform of higher agricultural education institutions in China*. Case study prepared for IIEP.
- Magrath, C.P. 1999. *Reforming U.S. higher education*. In: Proceedings of the Inaugural Conference of the Global Consortium of Higher Education and Research for Agriculture, Iowa State University.
- Maguire, C.J. 1999. *Future prospects for agricultural education systems: trends and perspectives in agricultural education in Asia-Pacific*. Tokyo: Asian Productivity Organization.
- Maguire, C.J. 2000. *From agriculture to rural development: critical choices for agricultural education*. Proceedings of the 5th European Conference on Higher agricultural education. Seale-Hayne Faculty, University of Plymouth, UK.
- Melnychuk, D. 2002. *The reform of higher agricultural education institutions in Ukraine*. National Agricultural University of Ukraine. Study prepared for IIEP-UNESCO.
- Naibakelao, D. 2000. *The SAFE initiative: challenges and opportunities*. In: Proceedings of Workshop on Bringing African Universities and Colleges More into Agricultural Development, Accra and Cape Coast University, Ghana.
- Paarlberg, D. 1992. "The land grant college system in transition". In: *Choices*, Third Quarter. Published by the American Agricultural Economics Association.
- Ping, C.J. 1998. In: A.H. Ronning and M.-L. Kearney (Eds), *Graduate prospects in a changing society*. Paris: UNESCO.
- Ramos, E.; del Mar Delgado, M. 2000. *From reflection to action: higher education in rural development at the University of Cordoba*. Proceedings of the 5th European Conference on Higher agricultural education. Seale-Hayne Faculty, University of Plymouth, UK.
- Ramos, E.; del Mar Delgado, M. 2002. *Experience of the University of Cordoba in higher education on rural development*. Study prepared for IIEP-UNESCO.
- Ruffio, P.; Barloy, J. 1995. "Transformations in higher education in agricultural and food sciences in Central and Eastern Europe". In: *European Journal of Agricultural Education and Extension*, 2(2).

- Sanyal, B.C. 1995. *Innovations in university management*. Paris: UNESCO.
- Schuh, E.G. 2000. *Why human development matters*. In: Proceedings of Workshop on Bringing African Universities and Colleges More into Agricultural Development, Accra and Cape Coast University, Ghana.
- Szekely, C. 1998. *Effects of structural and functional change in agriculture on the development of higher agricultural education in Europe*. Paper presented at the 4th European Conference on Higher agricultural education, Moscow,
- Van Crowder, L.; Lindley, W.; Bruening, T.; Doron, N. 1998. *Agricultural education for sustainable rural development: challenges for developing countries in the twenty-first century*. Rome: FAO.
- Wallace, I. 1997. "Agricultural education at the crossroads: present dilemmas and possible options for the future in sub-Saharan Africa". In: *International Journal of Educational Development*, 17(1), 27-39.
- World Bank Task Force on Higher Education and Society. 2000. *Higher education in developing countries, peril and promise*. Washington, DC: World Bank.
- World Bank. 1992. *Assistance to agricultural higher education 1965-1990. Operations evaluation*. Department Report No. 10751. Washington DC: World Bank.
- Zertuche, M. 2002. *The reform of education and the transformation process – School of Agriculture, Technology and High Studies Institute of Monterrey*. Study prepared for IIEP-UNESCO.

Chapter VI

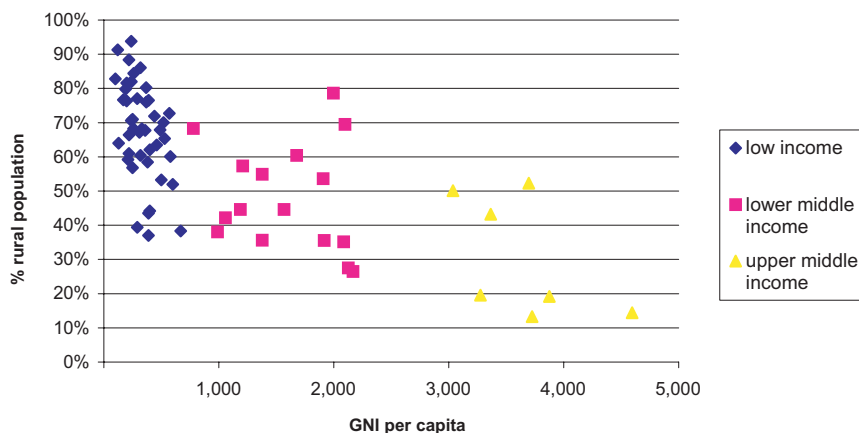
Main findings and implications for policy and donor support

*David Atchoarena with Lavinia Gasperini,
Michael Lakin and Charles Maguire*

1. Return to contextual issues: the decline in rural support

In recent years, poverty reduction strategies have made a comeback, both at the national level and among donors. However, the rural dimension of poverty has not yet been fully recognized. Within countries, the poor are still concentrated in rural areas. According to available projections, poverty will continue to be mainly rural until 2025. Furthermore poverty, largely a reflection of under-development, remains correlated with rurality. Rural countries are also poverty-stricken countries.

Figure 1. Gross national income per capita (in US\$) according to percentage of rural populations – 1999



Low income countries: GNI per capita is US\$745 or less.

Lower middle income countries: GNI per capita is US\$745 – US\$2,975.

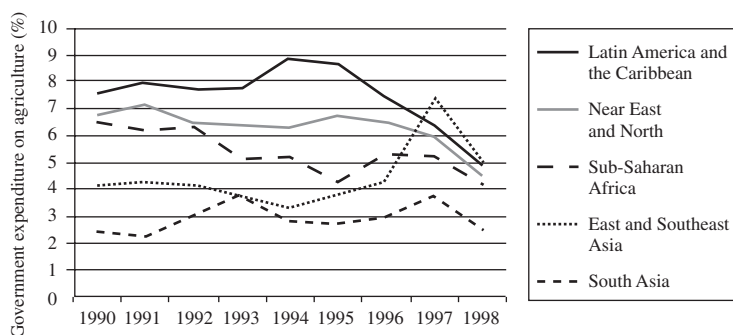
Upper middle income countries: GNI per capita is US\$2,975 – US\$9,205.

Sources: World Bank (for Gross National Income data).

United Nations Secretariat (for population data).

The overall rural poverty situation remains critical as rural areas continue to suffer from inadequate resource allocation, be it from domestic budgets or from international aid. In spite of the significant development of the off-farm rural economy, agriculture still represents the major rural economic sector and is the largest provider of rural jobs. Recent econometric research confirmed that agriculture is a 'key engine' for poverty reduction. Yet, public expenditure for agriculture has declined during the 1990s in developing countries.

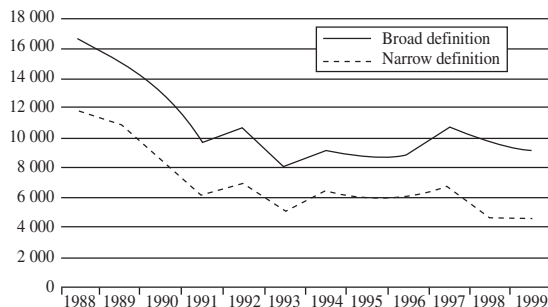
Figure 2. Government expenditure on agriculture as a share of total expenditure



Source: FAO, 2002a.

This lack of support to agriculture at the national level is compounded by a decline of external financing to the sector.

Figure 3. ODA commitments to agriculture from 1988 to 1999



Note: The narrow definition of agriculture includes crop and livestock production, land and water, agricultural inputs and services, fisheries and forestry. The broad definition includes all elements in the narrow definition as well as research, training and extension, manufacturing of agricultural inputs, environmental protection, agro-industries, rural development and infrastructure, and regional and river development.

The graph shows the evolution of concessional external assistance to agriculture from 1988 to 1999 in 1995 prices. The figures represent commitments made by donors, showing a drastic decline in ODA during the period. The decline is more pronounced for the narrowly defined agriculture sector. The declines in concessional flows for the broadly defined agriculture sector have been contained mainly due to the increased weight of environmental protection, research, extension and training, and rural development and infrastructure in total concessional flows to agriculture.

Source: FAO.

The evolving share of agriculture in total World Bank lending further illustrates this trend. While the sector represented about 31 per cent of total lending in the 1979-1981 period, this share decreased to less than 10 per cent in 2000 and 2001. In recent years the drop was particularly marked as indicated by a 30 per cent reduction of lending between the 1996-1998 period and 1999-2001.

One could object and point out that agriculture *is not* the only feature of rural areas, particularly when considering the rapid growth of non-farm activities and employment. But taking into account rural development as a whole does not improve much the picture. There are no time-series data for rural space lending – another illustration of the lack of adequate monitoring. Available information for 1999-2001 shows that the World Bank allocated 25 per cent of its total lending to rural space for that period, corresponding to an average of US\$5 billion per year. Compared to the 1998-1999 period, rural lending in 2000 decreased by US\$2 billion – from 3.5 to 1.5 billion – representing in relative terms a decline from 12 per cent of total lending to 9.8 per cent. The World Bank recognizes that this spatial distribution of funds is not in line with the spread and magnitude of poverty (World Bank, 2002).

We need to add that when donor support to rural development is inadequate, or even decreasing, distortion in global markets increasingly jeopardize the sustainability of farm systems in poverty-stricken countries. A particular concern relates to the continued subsidies given by the Organisation for Economic Co-operation and Development (OECD) governments to their farmers. It is estimated that these financial flows represent about US\$1 billion **per day** (*The Economist*, 2 February 2002).

It is interesting to compare these levels of subsidies to the US\$5 billion **per year** support *granted by the international community to rural development* through the World Bank.

Not surprisingly, there is no relationship between the percentage of rural population and the level of external support received *per capita*. It is gradually recognized that there is a huge gap between the *increasing recognition* of the rural dimension of poverty and under-development and the *decreasing support* to agriculture and rural development, in general. The fact that the share of aid allocated to rural development has been small and declining during the 1990s is aggravated by the *overall decline* in the volume of development aid. Furthermore, countries with large rural populations have received relatively little external aid. To take two sizeable examples, China and India, which together, account for one third of the extreme poor (mostly in rural areas), each received total aid amounting to less than US\$2 per person in 1998, yet both countries have a good reputation and record for making use of aid to reduce poverty. It appears that aid tends to go to countries with relatively low levels of poverty and/or with policies that are not cost-effective in reaching the poor. The World Bank recognizes that it allocates less resources, per poverty-stricken or rural person, in low-income countries than in high-income ones. Even inside countries, the most 'difficult' rural areas typically get less support. For instance, the World Bank indicates that, in India, its level of intervention, per poverty-stricken person, in rural areas is five times higher in the four wealthiest states than in the four poorest ones.

However, if the pattern of overall under-investment in rural areas is clear, available data indicates that educational expenditures and aid to education cannot be easily attributed according to the rural/urban variable. Therefore, it is not possible to document trends in total educational expenditures allocated to rural areas. This information system gap hampers any attempt to monitor spatially-targeted educational policies.

2. Main findings

2.1 *New opportunities for rural development*

In spite of the many setbacks that constrained rural development and the failure of past strategies – including the so-called integrated rural development approach – new opportunities appear in the light of the emerging poverty-focused development framework. In particular, much hope is placed in the World Bank/IMF Highly Indebted Poor Countries (HIPC) initiative and in the Poverty Reduction Strategy Papers. Beyond injecting more resources towards rural areas, it is hoped that these processes will benefit from and at the same time generate, increasing community-driven initiatives and donor co-ordination. At the regional level, the New Partnership for Economic Development (NEPAD), among African leaders could also form the backbone of renewed policy interventions in rural areas.

Improving living conditions in rural areas represents a key challenge for educational progress. It is a basic human right, however, it is true that education improvements, if addressed in isolation from other economic and social investments, in depressed and stagnant areas where job opportunities are not available, might contribute to accelerating out-migration towards cities.

The need for inter-sectoral responses is once again widely acknowledged. But we know that inter-sectoral interventions are complex to implement, especially when they are centrally driven. Often, co-ordination problems arise from the delegation of sub-components implementation to line ministries, which have their own agendas. Experience suggests that, once desegregated at the local level, implementation is likely to appear much simpler partly as a result of an easier communication between the various stakeholders. In other words, the current patterns and trends of decentralization are likely to dissolve some of the obstacles that failed in the previously integrated rural development approach. Decentralization could then become a *key mechanism* for transforming rural areas. In particular, the devolution of power to sub-national political entities, as is happening already in many developing countries, contributes to local ownership and legitimacy, as opposed to previous processes that were purely administrative; local public services being managed by centrally-appointed administrators.

To some extent, the impact of the new aid context, in terms of mobilization, co-ordination and allocation, will depend on the domestic political economy that affects rural areas. *Will it change or will a status quo be maintained?* Rural areas are often considered to be ‘politically marginalized’, the rural poor having little capacity to influence policy-making and implementation. Typically, urban elite, sometimes supported by allied better-off farmers are said to control political and economic power for their own benefit. Therefore, to some extent, a rural development ‘*impasse*’ results from a deliberate misallocation of resources. This pattern is empirically documented in many low-income developing countries where, although agriculture contributes to the bulk of Gross Domestic Product (GDP) formation, rural areas only receive a marginal share of public investment.

In turn, low educational levels and weak capacities to undertake collective actions contribute to maintain the urban bias. Therefore, education and training policies for rural areas should also be seen as citizenship building mechanisms which reinforce the ability of rural poor to access and analyze information, to voice their opinions in public debates and possibly to establish strategic alliances with other members of the community, including in urban areas. The emerging institutional and political contexts, particularly increasing democracy and decentralization, should eventually contribute to reducing the urban bias.

2.2 *Basic education*

The centrality of basic education for rural development is now widely accepted. The lack of basic learning opportunities is both a contributing cause and an effect of rural poverty in the low-income countries.

Even where schools exist, various economic and social obstacles prevent some children, especially girls, from enrolling. The opportunity cost of schooling is one of the main obstacles for poor families, who often count on their children’s labour and earnings.

In general terms, rural children and adults – most of whom are poverty-stricken – have very limited opportunities to obtain a viable basic education that would help them ‘break free’ from the poverty cycle. Many rural children never frequent a school; many of those who do enrol fail to complete the full primary cycle; and even among those who do complete

it, many leave school barely literate. When they do exist, rural schools in remote areas are often in need of repair, poorly equipped and staffed with inadequately trained and under paid teachers.

The curriculum and sometimes the language of instruction are not suited to local conditions. Therefore, 'school learning' may appear quite irrelevant to poor rural children in comparison with their more immediate survival needs. Often, programmes targeting rural adolescents and adults are not well organized, nor well adapted to local learning needs and depend on untrained or inadequately trained, under paid personnel.

Targeting appears as a critical issue since rural programmes are concentrated on several at-risk-groups. Considering the importance of the juvenile labour force in poverty-stricken rural areas, working children are a large, amorphous group, which schools generally fail to serve. Rural ethnic minorities, remote and nomadic populations, which are poorly served by the school system, also require special measures to meet their basic learning needs. Refugees and Internally Displaced Persons (IDP) constitute another target group found in rural areas of a large number of countries. Children and adults with disabilities form a transversal category, whose learning needs are not met well or at all, especially in rural areas. These learners face exclusion from basic education programmes because of physical, mental or behavioural impairments, or because of negative attitudes in respect to their problems.

Finally, illiterate adults and others who have weak literacy and numeracy skills constitute an enormous target group for Adult Basic Education (ABE), which is largely left to non-governmental providers with relatively little government funding or control.

Despite the shortcomings in the provision of basic education in rural areas today and despite the chronic shortfall in resources allocated for it, progress is being made as many countries continue their efforts to expand its coverage and improve its quality.

2.3 Skill development and rural labour markets

The role of the rural sector in economic growth, employment generation and poverty reduction is not always readily recognized. In particular, national training systems are generally focused on industrial and service occupations.

In addition the so-called agricultural education system is often in bad shape. Furthermore, as already indicated, in most countries such system does not exist. Skills for rural labour markets are offered by a great diversity of public and private providers. Within the public sector, institutions are in most cases affiliated to various ministries and government agencies, often without clear overall co-ordination.

The need to reconsider the skill development issues in rural areas is related to the transformation of rural labour markets. Agriculture is not the only source of work and income for rural people.

Rural non-farm employment tends to flourish in dynamic rural areas. Yet, depressed rural areas tend to rely much on non-farm income as a response to the low and stagnant level of agricultural income. This diversification of activity and income plays an important role in improving the livelihoods of rural poor.

There is general agreement that education is a *determining factor* in access to off-farm employment and for the type of non-farm employment accessible. While persons with low levels of education are found in low-qualified jobs, those with higher educational levels can access better-paid and more qualified positions.

Typically, the government apparatus does adequately cover skill development for non-farm employment. Ministries of education and labour are usually urban-oriented while ministries of agriculture are still preoccupied mainly with farm-related occupations and training.

Addressing the skill gap in rural areas will require an enlargement of the scope of training policies beyond agriculture and the provision of training across sectors, including through NGOs and the private sector.

2.4 Higher agricultural education

Higher agricultural education (HAE) is facing a serious crisis of transition. The forces shaping the transformation of HAE have changed the composition of the student body as well as the programmes offered and the learning process.

The higher agricultural education institutions which have been able to cope with the changing needs and context are those that undertook deep reform, sometimes leading to a broadening of disciplines and a reduction

of the agriculture (crop and animal production) component of their offerings.

The most significant and eloquent change within higher agricultural education institutions is probably the redefinition of their missions. Hence, HAE institutions are evolving into multipurpose institutions serving the knowledge and skill needs of the rural economy. In fact, innovative HAE institutions often consider it imperative to serve as agents of change. Consequently, they tend to become more entrepreneurial, more sensitive to the needs of rural learners, more dedicated to outreach activities and more community focused.

Within this challenging framework, HAE institutions use strategic planning methods to analyze the economic opportunities and educational needs of their region, articulate a vision of their future and set development goals.

However, experience shows that, in spite of the progress made, most institutions find this process of adjustment and reorganization difficult, if not painful. Change is sometimes slow, always time-consuming and resisted by some.

2.5 Donor support

Providing Education for All (EFA) in the low-income countries is clearly a task for which external assistance is badly needed. Basic education in rural areas could be funded as a component of rural development or as part of the education and training sector. Unfortunately, it has received inadequate donor attention either way.

With some exceptions, aid allocated for the development of education has not brought major changes in poverty-stricken rural areas. This may be partly due to the shift in recent years from project funding to programme or sectoral support, which leaves the decisions on specific allocations largely to recipient governments, often driven by an urban bias. It may also reflect donor (and government) concerns about the content, relevance and cost-effectiveness of basic education programmes, especially for adults. There has been dissatisfaction with the results of some literacy campaigns and questions about the retention of literacy skills. However, the record is not totally bleak: for instance the World Bank has loaned some US\$8.7 billion

for education projects 'with a rural component' in 43 countries over the ten years through 1999.

Besides the level of the investment in education for rural areas, there are other concerns related to the effectiveness of aid mechanisms. The principal procedure used to deliver support to basic education changed over the years. The financing and implementation of projects have long been the dominant mode of donors' intervention. In recent years, agencies have opted for a more integrated method through the so-called Sector-Wide Approaches (SWAp). The SWAp model pays greater attention to the integration of agency and government and seeks to achieve improved co-ordination among development partners. Focused on outcomes and strategies, it involves less earmarking of agency funds.

In education, SWAps are expected to improve the policy, budgetary and institutional context in which services are delivered. Eventually this should lead to enhanced education efficiency, effectiveness and quality.

But the potential benefits of SWAps for rural development are not as clear. Contrary to education, rural development is not a sector and does not fall under the responsibility of a line ministry. Although the latest developments reflect the emergence of direct budgetary support, there are fears that emphasis on sector-based mechanisms of inter-donor co-ordination and development funds allocation may result in an inadequate consideration for rural development. Poverty Reduction Strategy Papers (PRSPs) may provide the channel to overcome this risk.

3. Policy implications

3.1 Policy focus

It is necessary to locate support to education in poverty-stricken rural areas within the wider context of rural development and to promote multi-sectoral approaches designed and implemented with a high level of community involvement. In the medium- and long-term, education-only responses are likely to fail. Enabling public investment and growth processes in rural areas are therefore required for sustained educational development.

Considering the role of off-farm employment and income in poverty reduction, rural development policies should include the provision of incentives for diversifying employment beyond the farm economy.

In the context of increasing decentralization, building local institutional capacities is much needed considering the weak implementation record of governments in low-income countries. Furthermore, new forms of aid such as PRSPs and budgetary support do require adequate institutional capacities, including at the local level. There is therefore a strong case for donors to give more attention to local level institutions.

It is likely that the policy framework should take into account the local dimension. The experience of OECD countries and particularly within the European Union, suggests that regional policies can contribute to promote investments and eventually development in the most remote areas. This approach may be particularly needed for prioritization of public investment within the framework of PRSPs.

3.2 Basic education in rural areas for targeted and integrated policies

Policy thrust and political will is probably the most important variable for accelerating the educational progress in rural areas. Furthermore, beyond the concern for building human capital in poor areas, governments should promote and recognize Universal Primary Education (UPE) as a child right.

In that context, the agenda for improving the provision of basic education in rural areas must aim beyond simply overcoming current urban/rural disparities to meet the basic learning needs of rural people as efficiently, effectively and equitably as possible. Some combination of formal and non-formal programmes is needed, as well as various informal educational opportunities (e.g. rural newspapers, libraries, and women's associations) for lifelong learning.

To attract and retain learners and to meet their needs effectively, there must be a simultaneous commitment to improve the quality and relevance of basic education programmes. In many instances, this will entail designing and running the programmes in close harmony with other development activities (health, food security, agricultural production, etc.)

organized in the rural areas concerned, to ensure that learners can put their knowledge and skills to good use.

Expanding the school enrolment of girls is a priority aim for many governments and for the international community. Increasing the *proportion of girls* enrolled, as well as their numbers – thereby moving toward better male/female equity in schooling – often requires special measures to induce parents to enrol their daughters and keep them in school. Take-home food rations, for example, have proved effective in boosting girls' enrolment and attendance.

A child's early years are increasingly recognized as extremely important for personal development. Therefore, well conceived Early Childhood Development (ECD) programmes should have a place in a country's overall provision of basic education.

Local adjustments to schooling (e.g. school hours) can sometimes open the doors to these children. Otherwise, offering working children an alternative to conventional schooling requires more planning and effort, but can achieve good results.

Efforts to expand basic education programmes to reach more learners need to be accompanied by measures to ensure that the content, quality and delivery of those programmes effectively meet learners' needs. The teacher is a key factor, of course and the relevance of the curriculum to the learner's needs and interests is essential.

The use of multi-grade teaching has large implications for low population density rural areas. Effective use of multi-grade teaching requires adequate teaching materials and support such as textbooks and teacher-training, both pre-service and in-service.

New approaches to contextualization of content and pedagogy offer encouraging options to improve relevance. Teachers must strive to make education interesting and relevant for the rural poor through the use of appropriate teaching/learning methods. Children need to develop cognitive and non-cognitive skills. School curriculum should be meaningful regarding the life situations of rural children.

How then to plan basic education in relation to rural development?
Micro-planning and information systems must be amended to better capture

rural issues and trends. Developing access in an appropriate way requires reliable data on out-of-reach children. Remote and school-less areas are often not adequately covered in government surveys.

More effective monitoring of basic education activities in rural areas is much needed. Too little is presently known about what education is needed, what is being offered and to whom. Eliminating urban/rural disparities in basic education requires comprehensive planning within the overall education and training system. Its formal and non-formal components should be designed and managed to be complementary and insofar as possible, they should be integrated with other rural development initiatives (e.g. to improve health, food security, agricultural production, protection of the environment, local autonomy, access to credit, etc.).

Targeting funding where it is most needed is clearly essential, but often difficult to do because of bureaucratic constraints and vested interests.

Close co-operation among the providers of basic education is a prerequisite for making meaningful progress in rural areas. Many actors are involved, both governmental (e.g. ministries of education, agriculture, rural development, health, etc.) and non-governmental, operating at various levels, from national to local. Also, basic education in rural areas targets various categories of learners. Addressing such complexity requires a flexible, but determined effort by the governments and their partners.

It is generally accepted that institutional partnerships are required to achieve EFA goals. Alliances between government and NGOs are particularly important in rural areas, where most institutions are absent. Governments often rely on NGOs to provide education to the hard-to-reach children.

Within such partnerships, a major challenge is to promote community ownership of basic education programmes, which helps ensure their relevance, sustainability and effectiveness both in terms of learning achievement and of contributing to other rural development objectives.

3.3 *Skill development strategies*

The training policy for rural areas needs to be refocused to take into account and benefit from the wider reform of technical and vocational education and training. In particular, principles like linking education and work experience need to be applied in the rural context beyond the farm. Therefore, rural vocational schools need to engage more in various forms of collaboration with employers to provide company-based training and job placement services to students and also to offer continuing education and other types of support to enterprises.

However, rural zone areas are not homogeneous. There is a need to treat poverty-stricken and wealthy rural areas differently. In the former, skill development strategies should aim at developing the capacities of rural poor to gradually access better informal sector jobs. In the latter training provision should be diversified, as well as including the encouragement of private providers to take an interest and a part, in order to match a developing rural labour market.

Gender is an important factor in accessing non-farm employment and income. Specific training policies aimed at supporting women's participation in rural non-agricultural employment must take into account the gender dimension in order to ensure that women are not trapped in low-qualified, low-paid non-farm activities.

Another area where *increasing intervention is required* concerns community-based responses, linking training provision to basic needs and to local development initiatives. Although there is wide recognition of the merits of such an approach actual examples are still relatively rare.

Funding is a major obstacle to skill provision, it is even more so the case in rural areas, which often are poverty-stricken areas. The concept of funding partnerships, as illustrated in the set up of training funds, seems a promising way to support skill development in rural areas within an integrated framework, taking into account functional linkages between rural and urban economies and labour markets. But more experimentation is needed to implement innovative funding schemes for financing, in a sustainable way, access to training for the poor. Recent initiatives undertaken to support training for farmers point out new directions that deserve further exploration.

3.4 Emerging responses in the higher education sub-sector, including HAE institutions

The increasing labour market recognition of core competencies motivates many curricula changes in HAE institutions. Multidisciplinary approaches to teaching are also on the rise in an attempt to better relate to the complex nature of rural development issues. Furthermore, the search for more flexibility in delivery leads to a trend towards modularization.

The development of work-experience programmes constitutes a major evolution in delivery systems. The integration of this principle in universities reflect a move towards the increasing vocationalization of HAE programmes, as well as a growing concern for the employability of graduates. Another significant innovation is the importance given to learning-to-learn, including through the increasing use of information and communication technologies (ICTs).

The new approaches towards learning and teaching in HAE institutions reflect the growing importance of lifelong learning to ensure that people stay up-to-date with fast changing market trends and technological change.

Outreach programmes can represent powerful internal drivers for motivating institutional change. They also provide opportunities to diversify funding and linkages with rural communities and producers.

Fostering new entrepreneurs also becomes an objective of HAE institutions in a context where often highly skilled rural jobs are insufficient.

Key strategies for reforming HAE institutions include:

- Expanding the mission beyond agriculture to embrace rural development issues.
- Introducing flexibility in curricula and delivery.
- Establishing creative alliances with business.
- Contributing to workforce development in their community.
- Becoming a rural resource centre concerning technologies and markets to farms and small businesses.
- Promoting entrepreneurship.
- Establishing linkages with the rest of the world to build knowledge.

- Adopting governance practices relying on partnerships with outside stakeholders and on strategic planning methods.
- Using flexible forms of staff management.
- Diversifying their sources of funding, particularly through increasing income-generating outreach activities.

In the context where institutions generally have a high level of autonomy such transformation should be facilitated through the provision of adequate consultation, incentives and support from government.

3.5 Improving donor support

External partners must offer more concerted and effective assistance to develop basic education geared to agriculture, rural development and food security, especially in the poorest countries.

A ‘constant, pervasive theme’ in all of the *EFA 2000 National Assessment Reports* was ‘*the inadequacy of resources to meet even very basic requirements*’. This accusation and expression of dissatisfaction made by many countries, was given to point out disparities and shortfalls in the provision of basic education. Of course the responsibility and burden of funding education lie primarily with each government, but the governments of the low-income countries do not have the resources necessary to do the job on their own in the near future. The Dakar Framework for Action (DFA) adopted by the World Education Forum deals with the global shortfall of resources in these terms:

“Achieving Education for All will require additional financial support by countries and increased development assistance and debt relief for education by bilateral and multilateral donors, estimated to cost in the order of US\$8 billion a year. It is therefore essential that new, concrete financial commitments be made by national governments and also by bilateral and multilateral donors including the World Bank and the regional development banks, by civil society and by foundations”.

Of course this statement applies to the general provision of basic education, *not exclusively* in rural areas. However, since the majority of unschooled children and adult illiterates live in rural areas, that is where the lion’s share of additional resources is needed. Considering that the rich

countries subsidize their farmers by some US\$1 billion *per day* (*The Economist*, 2 February 2002, p. 63), the additional US\$8 billion *per annum* needed from these countries and the international funding institutions should be quite feasible financially.

The proposed increases in development assistance, to match commitments made during several global fora through the 1990s and up to the present time, may eventually generate these additional resources. Meanwhile, however, international partners can certainly improve the impact of their aid and loan funding for education, even at current levels, by *co-ordinating* and *targeting* these resources more effectively to help correct urban/rural and other disparities. External funding can also usefully help underwrite certain research and development costs relating to the improved provision of basic education in rural areas. Furthermore, in view of evidence that when countries have reasonable economic policies, “*the poorer the country, the more effective aid is at reducing poverty*” (*The Economist*, 16 March 2002, p. 74), donors might wish to reconsider which low-income countries can make best use of financial and technical co-operation. The design of projects of education for rural development constitutes a positive sign of the recognition of rurality by donors and countries.

Box 1. Rural Education Project – Colombia

The World Bank recently approved a loan for \$20 million to improve access to quality rural education in Colombia. The loan will support primary education, decentralization and teacher training, benefiting some 176,000 students in the country’s poorest areas.

One priority of the Rural Education Project in Colombia is to enhance access to quality education from the pre-school level through to the ninth grade. The target beneficiaries are approximately 176,000 boys and girls in 10 departments.

The objective will be pursued through innovative educational programmes tailored to the needs of rural communities and through support for teacher education and training. In addition, local projects will be implemented linking learning with productivity, as well as the productive sectors in the various regions of the country through the establishment of local public-private sector alliances.

The loan, which represents the first phase of support for the Colombian government's rural education programme, will strengthen the ongoing educational decentralization strategy by increasing the capacity of municipalities to develop their own education plans and improve school management.

The project will also focus on the indigenous communities by working with their territorial community councils or 'cabildos,' as well as on Afro-Colombian populations.

Additional features of the project include support for technical education and the development of programmes to foster peaceful co-existence by encouraging democratic school governance and strengthening school-community linkages.

Source: Extracted from 4/11/2000 official World Bank news release by Alejandra Viveros, LCR External Affairs.

The need for more co-ordinated approaches has been recognized, but has only recently begun to be addressed. The World Bank and other inter-governmental institutions, such as the Food and Agriculture Organization of the United Nations (FAO) and UNESCO, are now seeking to revive interest among donors in basic education (including for adults) in rural areas. The FAO/UNESCO flagship programme on 'Education for rural people' provides an illustration of this movement.

Box 2. New flagship on education for rural people

The Sustainable Development Department (SDD) of FAO and UNESCO are inviting member countries, UN entities and civil society to join in the establishment of a new Partnership on Education for Rural People.

The initiative seeks to address rural-urban disparities, which are a serious concern to governments and the international community as a whole. About 70 per cent of the poor live in rural areas. Despite the fact that education is a basic right in itself and an essential prerequisite for reducing poverty, improving the living conditions of rural people and building a food-secure world, children's access to education in rural areas is still much lower than in urban areas, adult illiteracy is much higher and quality of education is poorer.

In this regard, FAO and UNESCO are joining efforts in the establishment of a new flagship within the Education for All (EFA) initiative

with a focus on education for rural people. The partnership will be open to members committed to working separately and together to promote and facilitate quality basic education for rural people.

The flagship objectives are:

- building awareness on the importance of education for the rural people as a crucial step to achieve the millennium goals of eradicating extreme poverty and hunger
- achieving universal primary education (<http://www.un.org/millenniumgoals/>)
- overcoming the urban/rural education gap
- increasing access to basic education by rural people
- improving quality of basic education in rural areas
- fostering national capacity to plan and implement basic education plans to address learning needs of rural people. The flagship is a call for a collaborative effort to increase the co-ordination of efforts targeting the educational needs of rural people.

Source: FAO, 2002b.

Apart from possible improvements in the volume and co-ordination of external resources for basic education in rural areas, international partners can help countries in several other ways. For example, the many kinds of expertise and technical skills needed to analyze the provision of basic education in rural areas and to undertake the corrective measures required may not be readily available in all countries. International partners can help by organizing in-country training workshops, study visits to countries with similar conditions and problems and other experience-sharing activities to enable national officials and specialists to acquire useful information and gain broader perspectives to deal with basic education and rural development issues. Further support can be provided through technical documents and even publications, for a much wider audience like UNICEF's Facts for Life intended for mass distribution in local languages.¹ Increasingly, specialized Internet web sites make technical documentation easily and widely available and some provide a forum for technical support and exchanges of information – all this at relatively low cost. Some also provide information that can be used or adapted for

1. "Facts for Life" has been published in 15 million copies in 215 languages.

instructional purposes, for example, EcoPort (www.ecoport.org) offers information on agricultural subjects for use in schools.

International partners should not underestimate the importance, also, of continuous advocacy for Education for All (EFA), food security, rural development and other policy objectives relating to reducing rural poverty. Given the frequent turnover of ministers and senior officials, they constitute an obvious group – in the North as well as the South – that should be ‘reminded’ periodically of their country’s commitments to the relevant international and regional instruments and agendas for action. International conferences and several existing regional groupings of education ministries, as well as ministries responsible for rural development, can help serve this purpose, but the organizers must ensure that *rural poverty is clearly on their agendas*. Intergovernmental agencies and donors, particularly, can play a key role in focusing attention on basic education and other policy objectives concerned with rural poverty in discussions with senior officials and in planning programmes and projects involving external assistance.

Another group that merits special attention is parliamentarians, whether in donor countries or in low-income countries. Their understanding of the importance of basic education for all, both as a human right and as a prerequisite for sustainable development and democratic behaviour, should build political support for long-term investment in basic education and other factors contributing to rural development that are needed to reduce rural poverty dramatically. Efforts should be directed to achieve a strong consensus across political perspectives in support of constructive education and rural development policies. For example, the nascent ‘*Forum of African Parliamentarians for Education*’, launched in December 2002, could be a vehicle for dialogue and consciousness-raising along these lines.

Lack of funding is often seen as a major constraint to achieving development goals. The following passage from the joint statement by the five convenors² of the World Education Forum states a commitment to erase this obstacle. They “*call upon the international community, development and financial institutions, multilateral, bilateral and private donors to support the cause of Education for All as an integral part of*

2. The five convenors were the executive heads of UNESCO, UNDP, UNICEF, UNFPA, and the World Bank.

their global responsibilities, to ensure effective mechanisms of co-ordination and collaboration, in particular at country level; and thus, to ensure that no country, with serious resolve and viable plans to achieve Education for All, is thwarted by lack of resources”.

While such a statement is certainly useful, it is important to recall that more commitment is not sufficient. Problems are not solved by new strategies and concepts alone. Over the decades, the donor community has succeeded in launching various initiatives, but longer lasting solutions are more difficult to achieve. Donor-provided assistance only has a limited role in the development process of developing countries, national ownership and political will cannot be bypassed.

References

- FAO. 2002a. *World Food Summit, five years later*. Rome: FAO.
- FAO. 2002b. *Launching a new flagship on education for rural people*. Rome: FAO (http://www.fao.org/sd/2002/KN0801_en.htm).
- FAO web site. www.fao.org
- The Economist*. 2002a. 2 February, p. 63.
- The Economist*. 2002b. 16 March, p. 74.
- Viveros, A. 2000. Extract in *World Bank news release* dated 4/11/2000.
- World Bank. 2002. *World Bank rural development strategy: reaching the rural poor*. Washington DC: World Bank.

IIEP publications and documents

More than 1,200 titles on all aspects of educational planning have been published by the International Institute for Educational Planning. A comprehensive catalogue is available in the following subject categories:

Educational planning and global issues

General studies – global/developmental issues

Administration and management of education

Decentralization – participation – distance education – school mapping – teachers

Economics of education

Costs and financing – employment – international co-operation

Quality of education

Evaluation – innovation – supervision

Different levels of formal education

Primary to higher education

Alternative strategies for education

Lifelong education – non-formal education – disadvantaged groups – gender education

Copies of the Catalogue may be obtained on request from:

IIEP, Communication and Publications Unit

information@iiep.unesco.org

Titles of new publications and abstracts may be consulted at the following

web site: *www.unesco.org/iiep*

The International Institute for Educational Planning

The International Institute for Educational Planning (IIEP) is an international centre for advanced training and research in the field of educational planning. It was established by UNESCO in 1963 and is financed by UNESCO and by voluntary contributions from Member States. In recent years the following Member States have provided voluntary contributions to the Institute: Denmark, Finland, Germany, Iceland, India, Ireland, Norway, Sweden and Switzerland.

The Institute's aim is to contribute to the development of education throughout the world, by expanding both knowledge and the supply of competent professionals in the field of educational planning. In this endeavour the Institute co-operates with interested training and research organizations in Member States. The Governing Board of the IIEP, which approves the Institute's programme and budget, consists of a maximum of eight elected members and four members designated by the United Nations Organization and certain of its specialized agencies and institutes.

Chairperson:

Dato'Asiah bt. Abu Samah (Malaysia)

Director, Lang Education, Kuala Lumpur, Malaysia.

Designated Members:

Carlos Fortín

Assistant Secretary-General, United Nations Conference on Trade and Development (UNCTAD), Geneva, Switzerland.

Edgar Ortégón

Director, Projects and Investment Programming, Latin American and Caribbean Institute for Economic and Social Planning (ILPES), Santiago, Chile.

Jean Louis-Sarbib

Senior Vice-President, the World Bank, Washington DC, United States.

Ester Zulberti

Chief, Extension, Education and Communication Service, Research Extension and Training Division, Sustainable Development Department, FAO.

Elected Members:

José Joaquín Brunner (Chile)

Director, Education Programme, Fundación Chile, Santiago, Chile.

Klaus Hufner (Germany)

Professor, Free University, Berlin, Germany.

Zeineb Faïza Kefi (Tunisia)

Ambassador Extraordinary and Plenipotentiary of Tunisia to France and Permanent Delegate of Tunisia to UNESCO.

Philippe Mehaut (France)

Deputy Director, Centre d'études et de recherches sur les qualifications, (Céreq), Marseille, France.

Teboho Moja (South Africa)

Professor of Higher Education, Steinhardt School of Education, New York University, New York, United States.

Teiichi Sato (Japan)

Ambassador Extraordinary and Plenipotentiary and Permanent Delegate of Japan to UNESCO.

Tuomas Takala (Finland)

Professor, University of Tampere, Tampere, Finland.

Inquiries about the Institute should be addressed to:

The Office of the Director, International Institute for Educational Planning,
7-9 rue Eugène Delacroix, 75116 Paris, France.